Monograph on Integrated Training on National Programmes for Mother and Child Development

Published by
Central Technical Committee on Health and Nutrition
Department of Women & Child Development
Ministry of Welfare
Government of India, New Delhi.

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(This document is dedicated to all my colleagues who have been serving the women and children of India with concern, commitment and compassion for their welfare and development)

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Department of Women & Child Development
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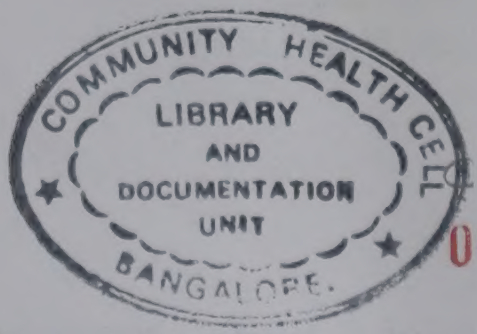
Office:
Department of Gastroenterology & Human Nutrition
All India Institute of Medical Sciences
New Delhi—110029.

September 1990

First Edition 1990

Laser Typeset & printed at:
FINE TYPESETTERS
30-A, Radheypuri Ext. II, Delhi-110051, Phone 2210830.



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CONTENTS

From the Editor's Desk

There are a number of national programmes for women and children such as the Maternal and Child Health Programme, Universal Programme on Immunization, Integrated Child Development Services, National Programme on Diarrhoeal Diseases Control and Control of Acute Respiratory infections. Each of these programmes envisages training for medical and paramedical functionaries at different periods of time. The need for integrated training in MCH, EPI or UIP, ICDS, DDC and ARI through a single system was repeatedly stressed at various forums. This was further reiterated by the ICDS consultants in their meeting held at New Delhi on 14th July, 1987. The Ministry of Health and Family Welfare and the Department of Women and Child Development in the Ministry of Social Welfare had been seized of this problem for the last few years. It had been agreed that there will be integrated training courses for the programmes addressed to the women and children namely the MCH, ICDS, UIP, DDC and ARI for the district, block and subcentre level functionaries. The Central Technical Committee on Health and Nutrition of ICDS had been charged with the responsibility of organizing the integrated training courses for health and social welfare functionaries of ICDS in the country.

The Central Cell of ICDS with the help of honorary consultants of ICDS from medical colleges had developed the curriculum and schedule for the integrated training in 1987. A document was also prepared with the help of experts for distribution to the trainees. The success of the integrated training programmes and feed-back from the trainees stimulated the Central Cell to improve on the document and prepare the present monograph.

The monograph is organised into separate sections, each of which represents the symposia and the lectures to be delivered during the course of the three to five days of the integrated training programme. All the programmes at the field level are operated through the same functionaries and therefore there is bound to be considerable overlap in the execution of the programmes at the operational level. Readers are advised to study each of the sections to get an idea about the individual programme. However, to get a holistic perception of the programmes for mothers and children it is important to understand the entire text of the monograph as one theme.

The effortss of the members of the Central Cell especially Dr. M.C. Gupta, Dr. Umesh Kapil, Dr. Y.L. Vasudeva, Shri K.S. Krishnamurthy, Dr. M.L. Roy and Dr. Vivek S. Adhish have made it possible to publish this document. I am hopeful that our functionaries will find it useful to improve their knowledge and understand their role towards national programme for mothers and children.

Typing assistance was provided by Shri Kulwant Singh.

B.N. TANDON

Acknowledgement

The first edition of the monograph of Integrated Training for Mother and Child Development was compiled with assistance of all consultants who influenced our thinking on education and training of medical and non-medical functionaries of ICDS. This document was prepared by the following resource persons :—

Dr. R.K. Puri
Dr. L.N. Balaji
Dr. S. Chawla
Dr. M.C. Gupta
Dr. S. Kar
Dr. M.L. Roy
Dr. Y.L. Vasudeva
Dr. Indira Murali
Dr. K.K. Dutta

The above monograph was utilized for the training of medical officers for few years. In view of the increasing awareness and need for an integrated approach to training, C.T.C. has now rewritten the monograph in the present form. Shri K.S. Krishnamurthy, Senior Consultant and Dr. Vivek S. Adhish, Senior Research Officer have contributed the additional chapters included in this monograph and have also updated the information in other chapters. I am extremely grateful to all the ICDS consultants and contributors who have helped in the publication of this monograph. I am thankful to the Department of Women & Child Development, Ministry of Human Resource Development, Government of India, particularly Shri S.P. Shukla, Secretary and Shri K.R. Venugopal, Joint Secretary who assigned this noble task to the C.T.C.

Assistance of UNICEF, New Delhi has been a great facilitator in discharging this responsibility. It is in the fitness of things that the services rendered by this unique international agency for the welfare of mothers and children have recently been commended by conferring the Jawaharlal Nehru Award by Government of India.

CHAPTER 1

INTEGRATED TRAINING PROGRAMME FOR MOTHER AND CHILD DEVELOPMENT (PMCD)

INTEGRATED TRAINING PROGRAMME FOR MOTHER AND CHILD DEVELOPMENT (P.M.C.D.)

Introduction :

There are a number of national programmes for the development of women and children in India. These include the Maternal and Child Health Programme (MCH), Universal Immunization Programme (UIP), Integrated Child Development Services (ICDS), National Programme for Diarrhoeal Diseases Control (CDD) and Control of Acute Respiratory Infections (CARI). Further, Government of India has launched two mission-oriented programmes such as Rural Water Supply and Sanitation and Universal Immunization, which have direct impact on mother and child development. Each of the national programme has training of medical, paramedical and other functionaries as its important activity. The need for an integrated training in MCH, UIP, ICDS, CDD, CARI, Safe Drinking Water, Environmental Sanitation, Personal and Food Hygiene, through a single system has been repeatedly stressed at various forums. It was strongly recommended by the ICDS consultants at the national meeting held at New Delhi on 14th July, 1987. The Union Ministry of Health & Family Welfare and the Department of Women & Child Development of the Union Ministry of Human Resource Development have been actively considering the proposal of an "Integrated Training" and finally approved this approach in March, 1989. Accordingly, the Central Technical Committee (CTC) of ICDS has drawn a comprehensive programme for four levels of functionaries. The *first* level training course has been established for the District officers of the Health Services, nodal department for ICDS and other appropriate officers connected with programmes of safe drinking water, hygiène and sanitation. The *second* level course is for the Medical Officers of the Primary Health Centres, Community Health Centres, Subsidiary Health Centres, Urban Health Centres, non-medical district level supervisors from each district, CDPOs of the ICDS blocks and other block level officers connected with drinking water, sanitation and hygiene projects. The *third* level training is for the middle level paramedical, health and ICDS functionaries. The *fourth* level training is meant for the Anganwadi Workers and multipurpose workers. Training curriculum has been prepared for each level of the training course separately. This monograph is meant for the participants of the first and second level of the training courses.

Advantages of integrated training

It is believed that integrated training programme has the following advantages :

- It will establish a holistic culture of learning whereby mother and child development, will become the goal of the functionaries.

- It will stimulate co-ordination and linkages between the functionaries of the different programmes for mother and child development.
- It will save time and prevent repeated interruption in the activities of the functionaries by avoiding their participation in several vertical training programmes at different periods of the year.
- It will save money as multiple visits to district headquarters for several training programmes will be replaced by a single visit for one integrated course.

The list of different national programmes with few important points is presented in Table 1.

Schedule of integrated training

In order to give proper focus on the subject of integrated training to the MOs and CDPOs, CTC has planned the 5 days schedule which covers most of the national progrmmes for Mother and Child Development, need for an integrated approach, besides specific topics like SDW. personal and food hygiene environmental sanitation, health and nutrition education which have great relevance to bring about overall improvement in the quality of life. Special emphasis is given for ICDS programme concept services, monitoring and evaluation and continued education. However, there is flexibility to modify the 5 days programme into 3 or 4 days duration to suit local requirements. If 3 days programme is envisaged, then the topics relevant to the training needs of the participants may be chosen from the above list of programmes. It may even be necessary to skip field visits to ICDS projects/PHCs/SC depending upon the participants requirements. For all programmes, monitoring and evaluation. Continued education are indispensible since the success of the programme implementation relies mainly on monitoring, evaluation and continued education.

Field experience has shown that CDPOs requirements differ from that of MOs and hence it may be necessary to have joint sessions for MOs and CDPOs on subjects of common interest and conduct separate sessions on strictly health subjects for the MOs only.

A model programme schedule of 5 days duration is given below for adoption with modification in contents, methodology and duration where necessary.

INTEGRATED TRAINING ON NATIONAL PROGRAMMES FOR MOTHER AND CHILD DEVELOPMENT (NPMCD)

Programme

Day 1

Registration

Session I (45 mts.): Integrated Training

(a) Introduction of participants
(b) Vertical training programmes—concept.
(c) Principles of Integrated Training Course
(d) Advantages of Integrated Training Course
(e) Constraints of Integrated Training Course
(f) Presentation of course contents of 5 days training
(g) Introduction and explanation of pre-course assessment.
(h) List of NPMCD in VII Plan

Session 2 (45 mts.) MCH Programmes

(a) Introduction
(b) Objectives
(c) Guiding principles
(d) Target population
(e) Components
(f) Implementation
(g) Training of functionaries
(h) Achievements in VII Plan

Session 3 (1.30 hrs.)

(a) Current nutritional profile of mothers and children
(b) Nutrition infection interaction and its impact on morbidity mortality in mother & child
(c) Nutrition services through different programmes
(d) Role of MO and CDPO and their teams
(e) Project level coordination for successful implementation of nutrition programmes and linkages.

Session 4 (1 hr.) Safe drinking water (S,D,W,):

(a) Importance of safe drinking water and establishment of Technology Mission.
(b) Availability of S.D.W. in our country
(c) Role of MO and CDPO and their teams
(d) Project level linkages and coordination with different workers at various levels.

Session 5 (1.30 hrs.) Personal Hygiene, Food Hygiene, Environmental Sanitation:

(a) Personal Hygiene
(b) Food Hygiene
(c) Environmental Sanitation
(d) Role of MO and CDPO and their teams
(e) Linkages and coordination with different workers at various levels.

Day 2

Session 6 (2.30 hrs.) Diarrhoeal Diseases Control Programme:

(a) Presentation & Discussion (1.30 hrs.)

- Introduction
- Definition
- Magnitude of the problem
- Objectives
- Beneficiaries/Target Groups
- Organization
- Activities
- Linkages with other programmes of mother and child development
- Monitoring
- Evaluation
- Role of CDPO and MO & their teams
- Project level coordination

(b) Demonstration (1 hr.)

- Case demonstration of dehydrated child/degree of dehydration/slides
- Preparation ORS solution and other home made solution

Session 7 (1 hr.) Acute Respiratory Infections:

(a) Presentation and discussions should cover the items as mentioned under Diarrhoeal Diseases Control Programme
(b) Demonstration through x-ray plates, slides etc.

Session 8 (3 hrs.) Universal Immunisation Programme:

(a) Presentation and discussion ($1^1/_2$ hrs.)
(b) Demonstration ($1^1/_2$ hrs.)
- Different kinds of vaccines
- Cold chain equipments & other equipments
- Storage and distribution
- Indenting etc. by visiting an urban Health Unit

Day 3

Session 9 (3.30 hrs.) Health and nutrition education (HNE) and messages to the community.

Health and Nutrition Education
- Introduction
- What is health and nutrition education
- Objectives of health and nutrition education
- ICDS functionaries to deliver HNE
- Venue
- Channels for communication
- Coordination mechanism.

Important health and nutrition messages to be delivered to the community.

Session 10 (3 hrs.) Integrated Child Development :

should cover the items as mentioned under Diarrhoeal Diseases Control Programme.

(Closing Session for 3-day course same, as listed for five day course)

Day 4: Field visit (whole day)
Briefing on the field visits and division into groups

- Departure for field visit to:
  PHC
  Sub-centre
  Anganwadi
- Reassembly and presentation of group observations & discussion.

Day 5

Session 11 (2 hrs.)

- Discussion on:
  (a) Integrated training
  (b) Prospects of Integrated monitoring/evaluation of NPMCD.
  (c) Intersectoral Coordination and linkages
  (d) Strategy for integrated training of middle level supervisors and peripheral workers

- Distribution of forms for post-course assessment

Closing Session

- Concluding remarks from:
  MO
  CDPO
  Course Organiser

- Distribution of Certificates
- Payment of TA/DA to the participants.

TABLE 1 : LIST OF PROGRAMMES FOR MOTHER AND CHILD DEVELOPMENT

Implementing Ministry/Deptt.	Title of programme and year of starting	Essential services	Beneficiaries covered
A. HEALTH & FAMILY WELFARE :			
A.1 Department of Family Welfare	I. Expanded programme of immunization (EPI) (1978)	I. Immunization II. Health education	Children Pregnant women
	ii. Universal immunization programme (UIP) (1985-86)	I. Immunization II. Health education	Children Pregnant women
	iii. Family Welfare Programme (1952)	I. Provision of contraceptive services II. Mass media and interpersonal communication (IEC campaigns)	Women 15-44 yrs., eligible couples ~~or~~ parents
	iv. Prophylaxis against nutritional anaemia (1970-71)	I. Distribution of Iron and Folic Acid (IFA) tablets II. Health and nutrition education	Pregnant and lactating Mothers F.P. acceptors, Preschool children 1-5 yrs.
	v. Prevention of nutritional blindness (due to vitamin A deficiency) (1970-71)	I. Distribution of vitamin A II. Health & nutrition education.	Preschool children (6 months-5 yrs.)

A.2 Department of Health	I. Control of Iodine deficiency disorders (IDD) (1962)	I. Distribution of iodised salt. II. Health & mutrition education.	Entire population
	ii. Diarrhoeal diseases control (DDC) [Sixth plan (1980-85)]	I. Distribution of ORS packets II. Health & Nutrition education	Children below 5 yrs.
B. HUMAN RESOURCE DEVELOPMENT			
B.1 Deptt. of Women & Child Development	I. Special Nutrition Programme (SNP) (1970-71)	i) Supplementary nutrition ii) Nutrition education	Preschool children; Pregnant and lactating mothers in urban areas; tribal blocks, backward rural areas
	II. Integrated Child Development Services (ICDS) (1975)	i) Supplementary nutrition ii) Health check up; iii) Immunization; iv) Referral services; v) Health & Nutrition education ; vi) Non-formal pre-school education vii) Supportive services like safe water supply and sanitation.	Children 0-6 yrs; Nursing and expectant mothers Women 15-44 yrs. 3-6 yrs. children Entire community.
	III. Wheat-based Nutrition Programme (WNP) (1986)	i) Utilisation of surplus (subsidised) wheat	Preschool children; Pregnant & lactating mothers
	IV. Balwadi Nutrition Programme (BNP) (1970-71)	i) Supplementary nutrition	Preschool children 3-5 yrs.

		V. CARE-assisted Programme (1950)	i) Supplementary nutrition ii) Health & nutrition education iii) Communications on ORT iv) Immunization v) Non-food projects	Preschool and school children; Pregnant and lactating mothers
		VI. World Food Programme (WFP) (1977-78)	i) Supplementary nutrition ii) Nutrition education	Preschool and school children; Pregnant and lactating mothers
B.2	**Deptt. of Education**	i) Mid-day meals Programme (MDM) (1962-63)	i) Supplementary nutrition ii) Nutrition education	School children
C.	**FOOD AND CIVIL SUPPLIES**			
C.1	**Deptt. of Food: (Nutrition Division)**	I) Production of nutritious foods and beverages (1962-63)	i) Production, popularisation of vegetable protein-based foods and beverages ii) Nutrition education	Preschool and school children; Pregnant and nursing mothers
		II) Nutrition extension services including mass media (1962-63)	i) Community nutrition education and participation	Entire population
		III) Integrated Nutrition Education (INE) (1985)	i) Integrating nutrition education with sanitation, hygiene safe water supply Immunization and health care services	Entire population

		IV) Food and Nutrition Extension Centres (FNEC) (1962--63)	i) Training and demonstration for conservation of seasonal food commodities ii) Nutrition education.	Adolescent girls; Women
		V) Food Enrichment (4th five year plan)	i) Enrichment of select primary food commodities ii) Promotion of enriched food stuffs	Preschool and school children; Pregnant and nursing mothers
C.2	**Deptt. of Food (Storage Division)**	I) Save Grain Campaign (1969-70)	i) Training, demonstration and publicity for scientific methods of food grain storage.	Farmers in villages
		II) Metal bins programme (1971-72)	i) Provision of bins.	Farmers in villages
C.3	**Deptt. of Civil Supplies**	I) Public Distribution System (PDS) (1986)	i) Supply management of essential food commodities at fixed price. ii) Consumer protection iii) Supply of specially subsidised food grains.	Entire Population Tribal blocks under ITDP only.
D.	**AGRICULTURE AND RURAL DEVELOPMENT**			
D.1	**Deptt. of**	I) Applied Nutrition Programme (ANP) (1961) (since discontinued)	i) Development of school & kitchen garden, fisheries,. poultry etc. ii) Distribution of protective foods. iii) Nutrition education	Preschool children; Expectant & Nursing mothers.

II) National Rural Employment programme (NREP) (formerly implemented as Food For Work Programme) (1980)	i) Generate employment in rural areas. ii) Social forestry iii) Rural sanitation and Water supply. iv) Drought-proofing services. v) Supply of subsidised food grains as part of wages.	Under-employed and unemployed rural people; (men and women); poverty group;
III) Rural Landless Employment Guarantee Programme (RLEGP) (1983)	i) Guaranted Employment for landless labourers for 100 days/year (one member for each family)	Rural Landless Labourers; women; Scheduled Castes and Tribes;
IV) Integrated Rural Development (IRDP) (1980)	i) Employment and income generating activities. ii) Provide inputs/ term credits to rural poor iii) Subsidies for irrigation projects	Rural families below poverty line (small and marginal farmers); Agricultural labourers; Rural artisans; and Scheduled Castes and Tribal groups.
V) Development of Women & Children in Rural Areas (DWCRA) (Sub-Plan of IRDP) (1982)	i) Income generating activities ii) Supportive services like Education, Health, Nutrition.	Womens' groups in rural areas.
VI) Training of Rural Youth FOR Self Employment (TRYSEM) (Part of IRDP) (1979)	ii) Providing technical and managerial skills to rural youth and women ii) Self employment in agriculture and rural industries	Rural youths (priority for SC/ (STs); Rural women

D.2	**Agricultural Research Education**	I) Education in Food and Nutrition in Agricultural Universities (EFNAG) (1974)	i) Development of Food and Nutrition Education in Krishi Vigyan Kendras (KVK) and trainers training centres. ii) Demonstration-cum-education related to food and nutrition.	Farmer trainees (rural families) and trainers

CHAPTER 2

MATERNAL AND CHILD HEALTH PROGRAMME

MATERNAL AND CHILD HEALTH PROGRAMMES

Introduction

Women during their reproductive period are exposed to several risk factors (including fatal) during pregnancy, child-birth and lactation. Maternal morbidity and mortality are two important factors which require utmost attention. Likewise, due to rapid growth and development, infants and children are exposed to greater risks deserving special attention. These vulnerable groups together constitute as much as 60 percent of the population. The term 'Maternal and Child Health' (MCH) refers to broad and currently accepted approach of promotive, preventive, curative and rehabilitative health care for mothers and children. Maternal and Child Health Programme forms an integral part of the Primary Health Care delivery system from the time the Primary Health centres were set up in 1952 as a follow-up action on the recommendations of the Bhore Committee.

Objectives of MCH

1. To reduce maternal, infant and childhood mortality and morbidity.
2. To promote reproductive health and
3. To promote physical and psychological development of children and adolescents.

The current approach is to deliver MCH care as a package in order to achieve greater impact of the services on the health of beneficiaries.

Guiding principles

- Improvement of the health of the mother and child is possible with proper family spacing. Family welfare is the beginning of family health and well-being.
- Services be based upon the effective use of all resources available within the community.
- Both mother and child be considered as a single unit.
- MCH services should be brought as near the home as possible.

- The services of traditional birth attendants (TBA) be purposefully utilised.
- All services intended to the mother and child can advantageously be delivered in an integrated manner.
- Voluntary agencies must be involved in providing MCH services.

Target Population

The Maternal and Child Health Programme is essentially aimed at giving services to all pregnant and lactating women and those in the reproductive age group. All children below 5 are also covered under this programme. In a Primary Health Centre of population of 30,000, the services are expected to be delivered to about 6000 women (20% of the population) and 4200 children under five years.

Components of MCH programmes

- Surveillance of health of women from 15 to 45 years and of children during the first six years of life.
- Ante-natal care of the first and subsequent pregnancies including medical termination of pregnancy.
- Intra-natal, post-natal and interconceptional care of women.
- Provision of family planning services for promoting small family norms.
- Care of the child.
- Education of men and women about small family norms, nutrition, cooking, hygiene and child care.
- Supplementary nutrition to children at-risk and nutritional rehabilitation to malnourished children.

Details of some essential services in MCH programmes :

Ante-natal care

- Early detection of pregnancy
- Screening for "at-risk" pregnancy
  - Age less than 17 years and over 35 years
  - Height less than 145 cm.
  - Weight less than 40 kg or more than 70 kg..
  - Last delivery within the previous 2 years.

5- More than four children

6 - History of severe bleeding in the previous pregnancy

7- Scar on the lower abdomen

8 - Pregnant women with pallor and breathlessness

- Immunization of the pregnant women with 2 doses of TT
- Prophylaxis for nutritional anaemia by providing iron and folic acid (IFA) supplements for a continuous period of 100 days.

Throughout the pregnancy, basic ante-natal care comprising screening for high-risk pregnancies, anaemia, pre-eclampsia, twins/multiple pregnancies, are to be carried out by examining the blood for Hb (Where this is not possible, look for pallor)., recording of the blood pressure, examination of urine for albumin and measurements of the fundal heights.

Ante-natal care also includes provision of knowledge regarding breast care, advice regarding confinement, family planning and referral needs. Specific advice regarding the nutritional intake during pregnancy is an important component of MCH care.

Intra-natal care

Intra-natal care comprises management of normal labour, delivery and detection of complications, and appropriate referral for future care.

- The delivery should be conducted by a trained personnel observing all the aseptic conditions.
- The birth attendant should be fully conversant with recognition of any complication during labour/delivery or the immediate post-partum period and how to start the immediate care before referring to an appropriate centre of secondary or tertiary care.
- Care of the new born and resuscitation of the baby.
- Early recognition of complications and referral to appropriate functionary or hospital.
- Health education regarding breast feeding, immunization, family planning and hygiene.

Post-natal care

In the field situations, post-natal care may be provided at home by the traditional birth attendant (TBA) or the multipurpose worker (female), or as the case may be. If the woman has delivered in an institution, the immediate post-natal care may be provided at the centre itself, but follow up home visits are essential for the following activities.

- Detection of risk factors and complications.
- Health and nutrition education.
- Advice regarding contraception/birth spacing/family planning.
- If prophylaxis for nutritional anaemia was started quite late in pregnancy, then it will be necessary to continue with iron and folic acid supplementation till period of 100 days is over.

The good maternal care aims to ensure a healthy mother as well as healthy newborn of good birth-weight, thereby minimising the maternal morbidity and mortality and laying the foundations for proper psychological and physical development of the child.

Care of the Newborn includes following actions

- Care-of eyes, Umbilical cord.
- Clear the airways of the mucus.
- Examine the baby for any injury, birth defect or complication
- Weigh the baby.
- Maintain adequate temperature, if premature, enclose it in a manner that the child does not lose heat.
- Initiate breast feeding at the earliest.
- Check regarding the first urination and faeces.
- Observe and train mother regarding child handling, hygiene.

Care of Children in Early Childhood

- Periodic examination of the children under-five years
- Immunization against the vaccine-preventable diseases.
- Maintain records related to child health and weight.
- Treatment of minor ailments, diarrhoea and acute respiratory infections
- Refer cases of illnesses and accidents to PHC in time.
- Regular deworming and prophylaxis against nutritional anaemia and blinding malnutrition.
- Carry out health education programmes related to child health

At-risk children

All those children who fall under one or more of the following categories should be considered at-risk of ill health and receive special attention :

- Weight below 50 percent of the reference standard.
- Difficulties in breast-feeding and introduction of bottle feeding before six months of life, or delay in giving supplementary weaning foods.
- Failure to gain weight in three successive months.
- Birth weight less than 2.5 Kg.
- Twin births
- History of death of two or more siblings below the age of 12 months.
- Death of either or both parents.
- Birth order of 4 or more.
- Severe acute infection like measles or whooping cough.
- Spacing of children is less than 2 years.
- Only child after a long married life.
- Upper mid-arm circumference less than 13.5 cm (for age group 1 to 4+year).

Women in the Reproductive Age Group

- Regular advice regarding contraception.
- When the women has completed her family, advice and motivation for permanent methods of sterilisation.
- Nutrition and health education regarding maternal and child health.

Implementation of the MCH Programmes

The services are delivered essentially through the staff members of the health infrastructure of the Primary Health Centres and sub-centres comprising the Medical Officers, the Health Assistants (male and female), the Health workers (male and female), and are supported by the Block Extension Educators of the PHC and the Traditional Birth Attendants and Village Health Guides at the village level. These functionaries deliver the services at the MCH clinic at the PHC and Sub-centres and by home-visits in the village, they are to receive appropriate support from the village health guides and also the anganwadi workers (in ICDS blocks) for carrying out various tasks of the programme.

Training of Functionaries for MCH Programmes

The Medical Officers are oriented in the scheme at their 5 week training course held at the Health and Family Welfare Training Centres (H&FWTC). The Health Assistants

receive two weeks training at H&FWTC apart from 6 to 8 weeks' training at the PHC. The Health workers are given a 6 to 8 weeks orientation in the PHC after the basic training and the Dais (traditional birth attendants) are trained for 30 days either in a Primary Health Centre or a Sub-centre. The overall objective of the training of the dai is to improve the mid-wifery services in the rural areas and also to involve them in the promotion of small family norm.

Achievements

Achievements of MCH programmes during the period 1985-86 to 1989-90 are presented in Tables 1 to 3.

Table 1: All India targets and achievements of prophylaxis against nutritional anaemia during the period 1985-86 to 1989-90

Figures in Millions

Year	Targets		Achievements	
	Mothers	Children	Mothers	Children
1985-86	14.00	14.00	18.05(AA)	17.16(AA)
1986-87	18.64	19.43	14.47	12.82
1987-88	22.00	22.00	18.65	18.50
1988-89	22.00	30.00	21.09(a)	21.61(a)
1989-90(X) (Propoaed)	22.00(XX)	30.00(XX)	14.76(a)✓	16.50(a)✓

(AA) Beneficiaries initiated.
(a) Achievement figures provisional.
(XX) Full target.
(X) Upto Feb. 90 only.
✓ April 89 to Jan. 90.

Table 2: All India targets and achievements of prophylaxis against blindness due to Vit. A deficiency.

Year	Targets	Achievement
1985-86	24.96	29.40
1986-87	28.97	30.24
1987-88	30.00	46.62 doses
1988-89	30.00	41.47 doses
1989-90(X) (Proposed)	30.00(XX)	29.46 doses (a) ✓

(a) Achievement figures provisional.
(XX) Full target.
(X) Upto Feb. 90 only.
✓ April 89 to Jan. 90.

Table 3: All India Targets and Achievements in respect of Immunization during the period 1985-86 to 1989-90

	1985-86	1986-87	1987-88	1988-89	1989-90(X)
DPT					
Target	14.04	15.30	17.21	18.04	17.50
Achievement	15.18	12.99(B)	16.69(B)	16.79(B)	16.34(B)
POLIO					
Target	14.04	15.30	17.21	18.04	17.50
Achievement	13.19	11.14(B)	14.27(B)	15.86(B)	16.17(B)
DT					
Target	11.19	12.10	13.00	18.94	13.37
Achievement	12.53	10.85	11.58	12.98	10.89✓
BCG					
Target	14.04	15.30	17.21	18.04	17.50
Achievement	6.62	11.81	16.35	17.38	18.18
TT (Pregnant mothers)					
Target	12.86	15.20	16.93	22.66	22.16
Achievement	10.36	11.73	14.96	16.18	15.48
TT (Children)					
10 years					
Target	5.54	6.70	7.80	9.75	12.89✓
Achievement	4.53	5.29	7.00	8.29	7.87
16 years					
Target	3.30	4.10	4.80	6.01	12.28✓
Achievement	3.00	3.49	4.50	5.66	5.42
MEASLES					
Target	-	5.70	11.21	15.76	17.50
Achievement	-	3.71	19.05	12.42	13.34

(X) Upto Feb. 90 only.
(B) Relates to IIIrd dose only
✓ April 89 to Jan. 90
(a) Achievement figs. provisional
(XX) Full target

CHAPTER 3

NUTRITION PROGRAMMES

NUTRITION PROGRAMMES

Introduction

Malnutrition is a multifaceted problem. Economically weaker sections of the society in the rural, tribal and urban slums are worst affected by malnutrition. Children and women (pregnant as well as lactating) are at high-risk for undernutrition.

Diet and nutrition surveys conducted by several organisations like the National Nutrition Monitoring Bureau (NNMB), National Sample Survey Organisation (NSSO), Department of food and projects like ICDS, in the past, have recorded a high incidence of diet-related deficiency diseases in vulnerable groups. Common diseases due to under-nutrition are the following:

- Protein Energy Malnutrition (PEM)
- Nutritional anaemia.
- Nutritional blindness.
- Iodine deficiency disorders. (IDD)

Besides, these four major problems, other disorders due to deficiency of B-group vitamins and trace elements are also not uncommon.

Protein energy malnutrition (PEM)

According to Gomez classification (based on weight for age), almost 90 percent of children between 1-5 years of age suffer from PEM. Severely malnourished children of this age group are at risk to life and indeed few millions do die every year due to malnutrition. Kwashiorkar, which is primarily due to protein deficiency, is less common and has been recorded in less than 1.0% of the preschool children. Marasmus due to caloric deficiency is more common in both infants and preschool children of poor urban and rural communities.

Nutritional status of children according to NNMB and base line ICDS surveys is presented in Table 1 and Table 2

Nutrition—infection Interaction and its Impact on Morbidity and Mortality

It is established that nutrition, immunity and infection are interrelated. Malnutrition alters immunocompetence and thus increases the risk of infection while repeated

infections tend to precipitate malnutrition, particularly in those cases when the nutrient intakes are marginally inadequate. Immunoresponse basically consists of cell mediated immunity, humoral anti-bodies like immunoglobulins, complement system etc.

Protein energy malnutrition is one of the most widespread nutritional disorders in our country. A large number suffer from mild and moderate forms of malnutrition with varying degrees of growth retardation. Immune functions so far studied have all been done in severely malnourished children. We have yet inadequate information regarding the inter-relation in infection with mild and moderate cases of malnutrition. The vicious cycle of under-nutrition and infection is the characteristic feature of the 'poverty syndrome' in which a large part of our child population live.

Severe infection may lead to malnutrition, but a small amount of natural or artificial infection is necessary to give the body sufficient stimulus to produce the immunity. In other words, the question of immunization in the malnourished children will be put to the scientific workers. People may argue that the National Immunization Programme may not bring the adequate effect because most of the children may suffer from mild and moderate degrees of malnutrition. The scientific data has established that this national immunization programme can be carried out safely to the children who are suffering from mild or moderate malnutrition. The problem of protein energy malnutrition is being managed with the help of the following programmes which provide supplementary calories and proteins to the beneficiaries.

Special Nutrition Programme (SNP)
(Ministry of Human Resource Development, Dept. of Women & Child Development)*

SNP provides supplementary nutrition to:

- Children below 6 years at 300 calories and 10 gms protein per child.
- Expectant and nursing mothers will receive 500 calories and 20 gms protein, and severely malnourished children 600 calories and 20 g proteins.
- Supply Vit. A, Iron + Folic Acid (IFA) tablets in the last trimester of pregnancy.

Number of feeding days is 300 in a year. The scheme has been transferred to the states during 5th Five Year Plan. SNP is providing supplementary nutrition to nearly 11.5 millions beneficiaries, which includes 10.5 millions who have been transferred to the ICDS.

Initially, SNP provided food at the cost of 25 Ps/Child/day and 50 Ps per mother/day. However, the food cost has been revised as following with effect from 1.4.85.

- 75 paise to provide 300 calories and 10 g protein per child per day (Children 6 months - 72 months).
- 125 paise to provide 600 calories and 20 g protein/day to the severely malnourished children.

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* Deptt. of Women and Child Development is currently placed under Ministry of Welfare.

- 105 paise to provide 500 calories and 20 g protein per day to the pregnant and lactating mothers.

Evaluation studies have pointed following weaknesses of the SNP:

- Beneficiaries are not being selected strictly on nutritional/socio-economic considerations,
- Number of feeding days are not strictly adhered to,
- Sharing of food is too common,
- There are cases of pilferages and
- The programme is not implemented in coordination with health services.

Integrated Child Development Services (ICDS)
(Ministry of Human Resource Development, Dept. of Women & Child Development)

Refer to Chapter 10

Wheat-based Supplementary Nutrition Programme (WNP)
(Ministry of Human Resource Development, Dept. of Women & child Development)

WNP was launched on 1.1.1986 with a view to utilise the surplus stocks of wheat to ameliorate the conditions of weaker sections through centrally sponsored programmes. preschool children, nursing/expectant mothers are covered by this programme. Centre supplies wheat free of charges and supportive costs are borne by state Govts (for additional ingredients, cooking, transport etc.) Dept. of Women and Child Development has planned to cover 30 lakhs (3.0 million) beneficiaries under the central scheme. Cost per beneficiary is 50 Ps/day which includes cost of wheat. In state funded WNP, wheat is supplied at Rs. 700/- per MT which is the central subsidy.

Budget provision for 1988-89 was Rs. 2300 Lakhs.

Balwadi Nutrition Programme (BNP)
(Ministry of Human Resource Development, Dept. of Women & Child Development)

BNP is implemented through voluntary agencies like:

- Central Social Welfare Board (CSWB)
- Indian Council of Child Welfare (ICCW)
- Harijan Sevak Sangh
- Adimjati Sevak Sangh
- Kasturba Gandhi National Memorial Trust.

These agencies extend assistance to local voluntary agencies through their state units to implement the programme. A total of 2.29 lakh children in the age group 3-5 years are covered through 5040 Balwadis in the country. Their social and emotional development are also taken care of. Supplementary nutrition consists of 300 calories and 10 g proteins/day and 270 feeding days in a year. Grant-in-aid assistance covers honorarium for the balsevikas/helpers and supplementary feeding of children.

Tamil Nadu Integrated Nutrition Project (TINP)
(Tamil Nadu Govt., through Ministry of Human Resource Development (HRD), Dept. of Women and Child Development)

Similar in concept to ICDS, the project is being implemented in 10 districts selected in Tamil Nadu. The project is assisted by the World Bank partly. The programme aims to improve the health and nutritional status of children below 3 years of age, pregnant and lactating mothers. Second phase of the programme to cover the entire state is under consideration. The project covers rural areas of about 173 blocks in the following districts: Anna, Chengalpattu, Kamarajar, Madurai, Muthuramalingham, North arcot, Ramanathapuram, and V.O. Chidambaranar. Total number of beneficiaries under this programme is 6,28,610 children (6 months-36 months) and 2,45,534 pregnant and nursing mothers.

World Food Programme (WFP)
(Ministry of Human Resource Development, Dept. of Women & Child Development)

Between 1977-78 and 1984-85, 3 phases of WFP have been completed. The project provides supplementary nutrition for children below 6 years and pregnant/lactating mothers. Due to phasing out of the CARE Programme, adjustments had to be made from 1.1.87, after implementing phase IV for two years (1.4.85 to 30.3.87). Phase IV was further extended by one year, terminating at December, 1988. Phase V, WFP assistance to cover five states for 2 years has been approved for 1990 and 1991. Beneficiary coverage has been adjusted and WFP assistance is limited to 5 states as under:

States	No. in lakhs
Assam	1.66
Kerala	10.23
M.P.	2.17
Rajasthan	3.14
U.P.	4.00

CARE assisted Programme
(Ministry of Human Resource Development, Dept. of Education)

Dept. of Women & Child Development administers INDO-CARE agreement of 1950 which provides for supplementary nutrition for vulnerable groups for pre-school

feeding in nine states viz., A.P., Bihar, Gujarat, Karnataka, M.P., Maharashtra, Orissa, Rajasthan and West Bengal and Supplementary nutrition programme in some other states,

During 1988-89, a total of 95,51,700 beneficiaries including 68,11,700 for preschool feeding were targeted to be covered, by CARE programme.

Midday Meals Programme (MDM)
(Ministry of Human Resource Development, Dept. of Education)

Mid-day meal Programme is also known as 'noon meals programmes', implying that meals are served around mid day or noon. Started in 1962-63, MDM has been extended all over the country in ensuing years. MDM aimes at providing nutritious meal to primary school children (6-11 yr) and thereby improve the nutritional status by bridging the dietary gap. Its another objective has been to improve school enrollment and reduce drop outs. Priority is accorded to SC/ST and backward classes of the community, in the feeding programme.

300 calories, 8-12 g protein/day/beneficiary is to be provided at a cost not exceeding 50 paise. No. of feeding days is 200 days/year, though, in actual practice, feeding days vary between states, and within states also. Towards the end of 6th Five year plan, about 20 million school children were covered by this programme annually. Same number of beneficiaries have been retained in VII Plan period.

Evaluation studies have shown that nutritional improvement was significant but there was not much improvement in school enrollment/attendence. The discontinuity in the supply of food materials reduced the impact of the programme. It has also been noted that number of feeding days were not strictly adhered, and the noon meal often substituted the meal at home. Lack of proper terminal cooking facilities, inadequate storage facilities have been also recorded in some centres. Nutrition education has been totally neglected in this programme.

Programmes to increase availability of food :

Following programmes indirectly help the increase in availability of food to the family to prevent and manage the protein energy malnutrition.

- Production of nutritious foods/beverages.
- Food Enrichment/Fortification Programmes.
- Mobile food and nutrition extension units (MEU).
- Integrated Nutrition Education (INE).
- Food and Nutrition Extension Centres (formerly known as Community Canning and Preservation Centres).

- Food Processing and Nutrition Centres (FPNC).
- Mass media, communication (Extension & publicity).
- Save grain campaign (SGC).
- Supply of essential commodities and public distribution system (PDS).
- Applied Nutrition Programme (ANP).
- Integrated Rural Development Programme (IRDP).
- Development of Women and Children in Rural Areas (DWCRA).
- Training of Rural Youth for Self-Employment (TRYSEM).
- Education in Food and Nutrition in Agricultural Universities (EFNAG).
- National Rural Employment Programme (NREP)
- Rural Landless Employment Guarantee Programme (RLEGP)

The description of these programmes is given at the end of this chapter.

Nutritional Anaemia :

Poor absorption of iron from cereal diets, low iron intakes, hookworm infestation are the important causes for high incidence of anaemia. Generally wheat eaters from north had higher intake of iron. Vulnerable groups like pregnant women, and lactating mothers have poor intake of iron.

Anaemia due to iron and folic acid deficiency is known to affect upto 50 percent of Indian women in the low income groups in the 2nd half of pregnancy, 40-60 percent preschoolers, and 25-30 percent women of child bearing age. Nearly 10 percent of maternal deaths in India are attributable to anaemia.

National Nutrition Anaemia Control Programme (NNACP) covers pregnant women, nursing mothers, women acceptors of terminal methods, and IUD acceptors. Target is to cover 50 per cent of the total pregnant/nursing category of women and 25 acceptors of terminal methods and IUD acceptors. Fifty per cent children in age group 1-5 have also been included in the programme.

Recommended daily dose of Iron & Folic Acid (IFA) tablets is as follows.

Adult Women:	60 mg elemental Iron (equivalent to 180 mg Ferrous Sulphate) + 0.5 mg Folic Acid
Children: 1-5 Yrs.	20 mg elemental Iron (equivalent to 60 mg Ferrous Sulphate) + 0.1 mg Folic Acid.

If the preschool children cannot swallow the tablets, 2 ml liquid is given. Anti-anaemia drugs are inexpensive and distribution logistics are simpler. Iron plus folic acid tablets are advised for regular daily dose during the last trimester of pregnancy. Nausea may occur as side effect in some cases. Two tablets/day/3 months is the normal dose given to the mothers. Supplementation of folic acid to iron preparations increases the birth weight of infants by 100-200 g.

Drugs/tablets are procured and distributed by Government of India. Cost of drugs is adjusted as grants to state Govts./UTs. Health Deptt. provides drugs for 13 million each, children and mothers annually. The programme is implemented through State Govts. at the PHCs and AW centres.

Allocation of funds remained at Rs. 2.0 crores annually during 4 to 6th Plan period. By 1990. It is proposed to cover the entire target population.

Nutritional Blindness due to Vitamin A Deficiency :

Vitamin A deficiency in preschool children is a major public health problem Government of India estimates reveal that nearly 30,000 children go blind every year du to Vitamin 'A' deficiency. Association between high prevalence of vitamin A deficienc symptoms in children and relatively high rates of growth retardation and morbidity amon children has also been suggested. UNICEF (1981) estimated that at any given point o time, nearly one million children suffer from vitamin A deficiency. An estimate by Bhaskara suggests that 5 per cent of preschoolers and 10 percent school children of poor-socio economic group suffer from vitamin 'A' deficiency. NNMB studies have shown that eve though, vitamin 'A' (retinol) intake has increased over the years, average intake sti remains low, In 1982 it was only 50% of the Recommended Dietary Allowances (RDA High prevalence was recorded in this study in school-age children in all the incom groups. In urban areas, children belonging to industrial labour, low income families showed higher prevalence, Generally southern states had lower intake of vitamin 'A' compared to other parts of the country.

Vitamin 'A' distribution programme was launched in 1970-71 in 7 states to begi with and later on extended to cover more states. It is implemented through the PHCs o the Health Department. Massive dose of vitamin "A" is given at 200000 IU, once in 6 months to all the children between 1-5 years of age. Nutrition education campaign organised at PHCs stresses for the consumption of inexpensive vitamin "A' rich food like green leafy vegetables, yellow coloured fruits etc in seasons.

Out of an estimated 80 million preschool Children, only about 25 million are a present receiving massive dose of Vitamin 'A'. Reasons for poor coverage are :

- Inadequate supplies of vitamin 'A' which is largely imported and
- Adopting a clinic approach instead of the house to house approach

Evaluation studies have revealed reduction in vitamin 'A' deficiency and its conse quences.

Goitre (iodine Deficiency Disorders-IDD)

It has been estimated that, about 40 million people in our country are suffering from goitre due to iodine deficiency. States having high incidence of goitre are: J & K, H.P., Punjab, Haryana, Bihar, U.P., West Bengal, Sikkim, Assam, Mizoram, Meghalaya, Tripura, Manipur, Nagaland, Arunachal Pradesh. Others, include Maharashtra, M.P., Gujarat and Delhi. Besides goitre 2.2 million are severely mentally retarded and about 6.6 million suffer from neurological symptoms associated with Iodine deficiency.

National Goitre Control Programme (NGCP) assesses the magnitude of the problem through surveys and arranges production/supply of iodised salt. Universal salt iodisation is to be achieved by 1992. Impact of salt iodisation on the reduction of goitre incidence will also be monitored. Salt deptt. of Govt. of India (GOI) had set up initially 12 iodisation plants with UNICEF assistance, and subsidised the cost of iodisation. Against 8-10 lakh metric tonnes of iodised salt per annum, the actual production is around 2.0 lakh metric tonnes while the installed capacity of 12 plants is 3.70 lakh metric tonnes. GOI has already issued by end of 1987, licenses to nearly 500 units to produce iodised salt to the extent of 38 lakh metric tonnes by the end of 7th Plan. GOI provides cash grants to States/UTs towards health education and publicity. Quality control measures are stipulated by Prevention of Food Adultration Act (PFA) and hence the consumer is assured of standard quality of iodised salt, when the quality parameters are rightly enforced. Goitre cells have been set up in most states to tackle the problem effectively, and monitor the performance. NGCP is exclusively centrally sponsored scheme. The financial outlay during 7th Plan was Rs. 2000 lakhs as against a meagre allocation of Rs. 10 lakhs in 3rd Plan and Rs. 80 lakhs in 6th Plan period. NGCP requires intersectoral coordination between various agencies like Salt industry for production & licensing, PFA Division of MOH and FW (for Quality assurance), Railways (for wagon allotment Priority movement wagon allotment), and finance deptt. (for subsidy component).

Description of programmes to increase the availability of Foods:

Production of nutritious foods/beverages:
(Ministry of Food & Civil Supplies/Dept. of Food).

The project aims to provide specially processed food supplements, beverages based on vegetable proteins, from ground nut/soya. They are enriched with selected vitamins + minerals formulated to provide balanced nutrition. They are essentially food blends using a combination of cereal and Pulse flours oil seed flours from local resources or beverages containing animal milk and oilseed flour. UNICEF assistance was availed of, for providing equipments for processing. Government of India provided 50 per cent contingent grants, operational and staff expenses for the initial 3 years and later on, the projects were handed over to the implementing agencies in the states. The state governments provided 50 per cent contingent expenses.

Units set up with UNICEF assistance are:

- RTE (EXTRUDED FOOD UNITS) (Snack and weaning foods):
  - Dhar (MP)
  - Gangtok
  - Hyderabad
  - Jaipur
  - New Delhi
- RTE ENERGY FOOD UNITS (In Karnataka state only)
  - Belgaum
  - Chitradurga
  - Doddaballapur
  - Raichur

  Fifth unit was set up by Govt. of Karnataka at Mysore.
- MILTONE UNITS : (Milk Extenders based on vegetable proteins).
  - Bangalore
  - Calcutta
  - Hyderabad
  - Ranchi
  - Kanpur

  Sixth unit was set up by the Dept. of Food at Ahmedabad

Performance of the UNICEF assisted food processing units during the year 1988-89, are summarised below:

	Quantities Produced	Approximate cost
RTE extruded snacks/ weaning foods	29,187 Metric tonnes	Rs. 5000/- to 8500/- Per Mt
RTE Energy food	17,645 Metric tonnes	Rs. 6000/- Per Mt
Miltone	29.16 Lakh Litres.	Rs. 3.2 - 4.5 per litre

The products were produced and distributed on 'no loss, no profit basis' and subsidised by the departments. Per beneficiary ration was standardised and approved by DW & CD, but at the field level, dilution took place and beneficiaries received less quantity. Evaluation study carried out by an independent market research institute showed, RTE extruded foods/energy food were cost-effective, and popular. RTE extruded foods, RTE energy foods showed better acceptability than vegetable-protein based milk extenders. There was no distribution problems specially in the case of extruded foods/ energy food, while milk extenders had self-life similar to milk (16 hours only). Beneficiaries were not selected strictly on the basis of nutritional, socio-economic criteria and this was a major drawback of these programmes. Beneficiaries included preschool and school children, expectant and nursing mothers, Severely malnourished children were given extra food. The study recommended commercial marketing of these products to be economically viable as well.

A total of Rs. 23.00 lakhs was earmarked during 1988-89 to set up at least one food processing unit in one of the states; for miltone project, only token provision of Rs. 2.0 lakhs was provided for 1988-89 to meet grant-in-aid assistance for on going programmes.

Food Enrichment / Fortification Programmes
(Dept. of Food).

One of the snort term strategies to improve nutritional status of the population, is fortifying items of food of mass consumption. Suitable vehicles like salt, milk, bakery products have been identified and nutrients added to improve the nutritional qualities. Centralised processing systems are used for fortification programmes. Acceptability of these products was good and they were not expensive also. Fortified and enriched products can be consumed by all segments of the population, though they are specially produced and distributed for the vulnerable segments of the population in group feeding programmes.

Thirteen units of Modern Food Industries (Govt. of India undertaking) produced and distributed enriched bread for feeding programme. The bread is enriched with soya flour, and contained added vitamins A, B1, B2 and Niacin besides ferrous sulphate. The cost escalation was marginal.

Government of India had helped Tamil Nadu Salt Corporation to set up a unit to fortify 15000 Mts. common salt with iron compounds to eradicate iron deficiency anaema. This unit is yet to commence production. Another project has been approved and will be set up by M/s. Hindustan Salt Corporation Ltd., Jaipur.

To prevent nutritional blindness, GOI sanctioned the project to fortify milk with vit. A at 2000 IU per litre of milk. The programme has been in operation since Feb. 1980 in the dairy sector and currently 37 dairies are fortifying milk with vit. A. The output of vit. A fortified milk is 32.0 lakh/day in 14 states and 2 UTs. Cost of fortification works

out to1/4 paise litre or approximately Rs. 1.0 Lakh to fortify 1 lakh litres per day/year. Deptt. of food reimbursed the added cost of fortifying milk for 3 years as grant-in-aid assistance and thereafter, the project is to be implemented by the dairies themselves.

During 1988-89, Budget estimates for salt fortification programme/ milk fortification were Rs. 28.10 and Rs. 15 lakhs respectively.

Mobile food and nutrition extension units (MEU)
(Deptt. of Food)

As on 1.4.89, Dept. of Food had set up, 34 Mobile Nutrition extension units in different parts of the country (including 4 units in backward areas), to organise free of charges, food demonstration programmes at the community level and also arrange training programmes in community nutrition for the field level functionaries in collaboration with state Govt. Departments like Health, Social & Women Welfare, Rural Development, Education, etc. besides voluntary organisations. Subjects covered basic aspects of food/ nutrition, food groups and nutritive value/nutritional care of vulnerable groups/nutrients conservation by proper cooking, dietary deficiency diseases, their control/prevention, food hygiene *etc.*

Beneficiaries are drawn from low income groups of rural/tribal/urban backward areas, field level functionaries of extension programmes (in Health, Social and Women Welfare etc.). During the year (1988-89), 19294 programmes were carried out and 5322 villages with 6.41 lakh beneficiaries were covered. Audio visual aids, slide shows, TV spots, folders on nutrition-related topics are used for extension teaching.

A sum of Rs. 42.63 lakh was provided in the non plan sector, Rs. 4.40 lakhs under Plan schemes during 1988-89.

Integrated Nutrition Education (INE)
(Deptt. of Food)

It is well documented that, mere food alone cannot bring about improvement in nutritional status, and hence an integrated approach is inescapable. In view of this current thinking, programmes on food and nutrition by MEUs were re-oriented to include both food and non-food factors to provide comprehensive information to the masses and field level functinaries, and the earlier approach of food and nutrition programme had been replaced with integrated approach. Training the trainers for community nutrition work is carried out by the MEUs in the revised pattern. Both horizontal and vertical integration of services through intersectoral co-ordination had been attempted through the new pattern of working.

Boneficiaries include the community, field level functionaries incharge of extension programmes, voluntary service organisations etc. Training programmes are attended by

state Govt. field level functionaries implementing programmes for women and child development.

During the year 1988-89, 40 integrated nutrition education camps, 38 orientation training programmes were organised besides workshops for block level officers.

Rs. 32.00 lakhs were set apart for this scheme in the plan sector during 1988-89.

Food and Nutrition Extension Centres (formerly known as Community Canning and Preservation Centres)
(Deptt. of Food)

As many as 33 Centres provide training mostly for women in domestic fruit and vegetable processing methods to utilise seasonal fruits/vegetables for home use. For the public also, processing facilities are made available by prior appointment. Additional facilities to provide nutrition education to the trainees, have also been introduced recently besides food processing activity.

During the year 1988-89, 1719 training courses were organised and 28968 persons were trained and a total of 338 MTS processed fruit and vegetable products were produced.

Under non-Plan Rs. 84.94 lakhs and Rs. 10.50 lakhs in the plan sector have been provided for the year 1988-89.

Food Processing and Nutrition Centres (FPNC)
(Deptt. of Food)

In four rural areas of Baluserry in Kerala, Rajasmund in Rajasthan, Kumarghat in Tripura and Mahender garh in Haryana, centres have been set up to provide training in conserving / preserving food, salvage wastages, provide nutrition education to the trainees / beneficiaries. Low level technologies to conserve food and for generating income, are provided in these centres.

During 1988-89, 156 villages were visited and 377 programmes were organised. Rs. 11.00 lakhs were provided for 1988-89.

Mass media, Communication (Extension and Publicity)
(Deptt. of Food)

Deptt. of food set up the publicity wing to provide support to the field programmers by employing various types of mass media-AIR/TV/newspapers etc. The publicity materials are also available in regional languages to provide nutrition information through pamphlets, booklets, folders, wall charts, audio-visual aids like cassettes, radio-TV spots, films etc.

Covers all categories of beneficiaries.

Rs. 6.00 lakhs were provided for this plan scheme for 1988-89.

Save Grain campaign
(Deptt. of Food, Storage Division)

Post harvest technology operations play a significant role in conserving food grains, and other agroproduce, salvage wastages and make them available for human consumption. The operations include all activities from harvest to the table of the consumer. Plant protection measures, scientific storage of agri-produce at farm/ village level, are important to reduce losses and make available more and quality food grains and other produce to the people. Training the trainers at grass root level is one of the major components of the 'save grain campaign' scheme.

Supply of essential commodities and public distribution system (PDS):
(Deptt. of Civil Supplies)

Civil supplies Deptt. is mainly concerned with bridging the demand-supply gap' for edible oils by reducing imports, and augmenting indigenous oil resources. The deptt. also ensures supply of essential commodities through Public Distribution System (PDS)/ Fair Price shops (FPS) throughout the country. PDS has been included as an item of the 20 point programme in 1986, and has been added as a new item of the Minimum Needs Programme (MNP) from 1987-88. 'Consumer protection cells' have been set up to ensure supplies of quality/standard products of day-to-day use.

As on Sept. 1988, about 3.50 lakh FP shops had been set up throughout the country to supply dietary essentials viz. rice, wheat, sugar, and (imported) edible oil, besides other commodities. Of the total number of FPS, about 79 per cent function in rural areas, and the rest (21%) in urban areas. Nearly 28 per cent of these are in the cooperative sector.

Supply of specially subsidised food grains in ITDP areas and tribal majority states/ UTs is also one of the activities as part of poverty eradication programme. Wheat and rice are supplied to state Govts. at subsidised rates through Food Corporation of India (FCI).

Applied Nutrition Programme (ANP)
(Deptt. of Rural Development)

Orissa and Andhra Pradesh were the first states to introduce ANP in the 60s, followed by Tamil Nadu (1961), UP (1962) and by 1973, the whole country was covered. ANP envisaged production of nutritious food by themselves and consume them to improve their own nutritional status. Poultry, horticulture, bee keeping, nutrition education and gardening were given emphasis in the programme.

Evaluation Studies revealed several weaknesses like ANP did not generate sufficient awareness in the production and consumption of nutritious foods. Setting up Poultry units, Pisciculture, did not make an impact at all. People's participation through Panchayat Raj institutions, Mahila Mandals was not satisfactory. The scheme has been discontinued

Integrated Rural Development Programme (IRDP)
(Deptt. of Rural Development)

IRDP is an instrument to alleviate rural poverty, and the selected rural families are enabled to cross the poverty line by providing productive assets and inputs to the target groups. Term credits and subsidy are provided by Govt./financing institutions.

Pattern of subsidy is as follows:

Small farmers		25%
Marginal farmers	}	
Agri. Labourers		33-1/3%
Rural artisans'	}	
Tribal groups		50%

Ceiling is also imposed on the subsidies, and the programme is implemented by District Rural Development Agencies (DRDA).

During the preceding 4 years of the 7th Plan (1985-1988), Rs. 2222.71 crores were spent assisting 1.34 crores families. Evaluation studies conducted by RBI/NABARD had shown that there was positive impact on the income of the beneficiaries, mostly under-previleged. Some weaknesses identified by the studies are:

- Ineligible selection of beneficiaries
- Lack of infrastructure
- Low level of investment
- Lack of linkages
- Innovative programmes may be taken up for implementation e.g., Garments, Gem and Diamond cutting etc.

At least 30 per cent assisted families should belong to SC/ST categories and at least 30 per cent of these are women.

Development of Women and Children in Rural Areas (DWCRA)
(Deptt. of Rural Development)

Since women did not reap full benefits of IRDP, "DWCRA programme with focus on the rural poor women to provide them with suitable avenues of income generation according to their skills and to suit local conditions, was planned as sub plan of IRDP

Seventh plan outlay was about Rs. 48.05 crores (Govt. of India Rs. 20.30 crores+ UNICEF Rs. 27.75 crores). Multipurpose community centres are opened for training and to carry on economic activities. Training programmes are organised by National Institute of Rural Development (NIRD), Hyderabad for states, districts, block level officials.

Against a target of 7500 families for the period 1989-90, a total of 347 womens' groups were constituted (with 50810 members by December, 1988).

Training of Rural Youth for Self-Employment (TRYSEM)
(Deptt. of Rural Development)

TRYSEM aims to provide rural youth (18-35 yrs) with technical and managerial skills for income generating investment. TRYSEM as a component of IRDP, has linkage with it and was found to be cost-effective per unit of investment. Non-traditional items of work like AC-refrigeration repairing, diamond cutting, electro plating, TV repairs, mosaic polishing were also included as part of training. Priority is given to rural youth from SC category. Minimum coverage was to be 30 per cent and women 33-1/3 per cent.

Education in Food and Nutrition in Agricultural Universities (EFNAG)
(Deptt. of Agricultural. Research & Education)

EFNAG is intended to create a cadre of specialists in Agri. Universities with a wide understanding in human nutrition. It aims to improve community awareness and information about food resources, and nutritional issues by building up linkages between agricultural production and nutrition policies and more specifically between food and resources policies and nutrition policies. Education in food and nutrition in agricultural universities is linked to the training of farmers and trainers and to the orientation of extension workers. The programme aims to improve the nutrition of rural families, particularly women and children. However, nutrition course has been incorporated in the syllabi of nearly 15 agri-Universities, and core component includes development of food and nutrition education in Krishi Vigyan Kendras (KVK), and trainers training centres. Demonstration-cum-education and production activities accompany the food and nutrition courses. FAO/UNDP assistance is available for strengthening the Food and Nutrition related courses at Post graduate level.

National Rural Employment Programme (NREP)
(Ministry of Agriculture, Deptt. of Rural Development)

NREP was launched in October 1980 in place of 'Food for work' programme (FFW) to generate additional employment in rural areas for unemployed/underemployed persons. The programme was intended to develop durable assets for the villages and improve the overall quality of life in rural areas. The programme was modified to include social forestry (25% of outlay), work related to SC/ST (10% of outlay), besides providing, 60 million rupees for sanitary latrines. 'Drought proofing' also received considerable attention in this programme. Additionally, food grains at subsidised rates, were given to maintain stability of food grains and improve nutritional status.

During 7th Plan an outlay of Rs. 24874.7 million was provided and it was intended to generate total employment of 1445 million man days.

Rural Landless Employment Guarantee programme (RLEGP)
(Ministry of Agriculture, Deptt. of Rural Development)

RLEGP aims to improve and expand employment opportunities for the rural landless labour with a view to guarantee at least employment for one member of the rural landless labour household for at least 100 days in a year. RLEGP is planning to develop durable assets for strengthening rural infrastructure to meet the increasing demands of rural areas. There is close similarity in the eligibility-criteria in this programme, as compared to NREP.

An outlay of Rs. 17437. 8 million was earmarked in the central sector in 7th plan period. There had been administrative and financial constraints in implementing the scheme in 7th plan itself.

PERCENT DISTRIBUTION OF RURAL CHILDREN (1-5 YRS.) BY WEIGHT-FOR-AGE STATUS (GOMEZ GRADES)

States	NNMB Joint Family			
	Normal	Mild	Moderate	Severe
Karnataka	10.19	46.37	36.89	6.55
Andhra Pradesh	14.02	48.03	31.97	5.98
Orissa	19.45	38.33	33.33	8.89
West Bengal	16.05	48.56	31.28	4.11
Tamil Nadu	15.67	41.47	39.17	3.69
Maharashtra	8.96	38.60	41.69	10.75
Madhya Pradesh	14.71	35.79	39.21	10.29
Gujarat	11.55	44.01	37.47	6.97
Uttar Pradesh	21.57	54.65	19.94	3.84
Kerala	17.97	48.14	28.47	5.42

Average weight-for-age values of well-do-do children are used as standard.

Normals : Children having weight-for-age values of 90% or more of standard.

Mild : Children having weight-for-age values between 75% and 90% of standard.

Moderate : Children having weight-for-age values between 60% and 75% of standard.

Reference : Nutrition News, Vol 10 No. 5, 1989, National Institute of Nutrition, Hyderabad.

(Source: NNMB Surveys in Ten States)

PERCENT DISTRIBUTION OF 2-6 YRS. CHILDREN BY WEIGHT-FOR-AGE STATUS IN NEWLY SANCTIONED ICDS PROJECTS

States	Normal	Grade I	Grade II	Grade III	Grade IV
Gujarat**	23.0	40.7	30.1	5.8	0.4
Kerala	36.6	40.7	20.4	2.2	0.0
Maharashtra*	25.7	37.5	25.3	10.5	1.0
Orissa	55.3	26.8	11.8	5.5	0.6
Tamil Nadu	35.2	37.0	24.6	3.2	0.6
Punjab	53.0	26.9	13.5	6.6	0.0
Rajasthan	45.7	32.8	17.9	3.3	0.2
U.P.	32.6	37.9	23.3	6.1	0.1
West Bengal	55.1	25.7	14.2	4.6	0.4

* Figures for Gr. III & IV for Maharashtra are high because the state experienced continuous unprecedented drought for a period of 10 years.

** Figures for Gujarat are for 1984.

Source:Annual Survey 1987, CTC, AIIMS, New Delhi.

CHAPTER 4

SAFE DRINKING WATER

SAFE DRINKING WATER

Introduction

Water covers as much as three quarters of the earth's surface. In combination with air, food and energy, water has been responsible for our existence on the planet. No life is possible without water. Infact it is a paradox that with the availablity of so much water, getting adequate supply of potable water for variety of uses continues as one of the most pressing problems for the humanity! This is because of the fact that most of the water on the earth is salt water in oceans. Only 3 per cent of the total mass is fresh water and a considerable proportion of this is often polluted and unfit for human consumption. According to 'Technology Mission on drinking water in villages and related water management (Jan 1987), Deptt of Rural Development, Mini. of Agriculture, Govt. of India as many as 2.27 lakh villages (39% of the total 5.75 lakh) in our country have been identified as 'problem villages' for water supply. 'Problem village' includes all those villages which have no water source of their own. It is a distance of more than 1.6 km with 15 metres depth and 100 metres elevation difference, 'Biological contamination' (19%) is attributed to worm, cholera, typhoid etc; 'Chemical contamination' (13%) due to presence of excess fluoride, iron, brackishness etc.

Sources of water

As on 31.3.81, nearly 72 per cent of the urban and 31 per cent of the rural population had been provided with protected drinking water supply facilities. Common sources of drinking water in rural areas include ponds, tanks and reservoirs, rivers, streams, canals; lakes; and wells. Obtaining water, improving the quantity of supplies, quality of available water supplies and making it more available for non-domestic use (eg. irrigation) as well as domestic use (for drinking, cooking, washing etc.) have been recognised as priority areas by the Government of India.

The hardships emerging from qualitative and quantitiative inadequacies of water are enormous, in a way difficult to assess. Especially, in remote, rural and urban settlements, it is a common sight to notice young children and mothers covering long distances in order to fetch water for their day to day use. It is thus obvious that localising water supply, problem of reducing long distances, the labour element in water collection, are the key issues to be satisfactorily tackled in order to avoid the incidence of water-borne diseases. Use of carts, wheelbarrows, animals to transport water in remote areas do not

reduce the time factor involved, and such contrivances are not useful in hilly, undulating areas far away from the residences of communities. Alternative approach may have to be developed for water reserves by creating artificial ground catchment areas or catchment from roofs. However, the quality of such water may not necessarily be of the desirable quality in terms of purity and safety.

Importance of Safe Drinking Water (SDW)

"Water which is free from harmful micro-organisms (germs), and is palatable, is known as 'potable' or 'safe drinking water' (SDW). Water should be free from poisonous substances, excessive amounts of minerals and organic matters which could produce undesirable physiological effects. Water should also be free from colour, turbidity, taste and odour, of moderate temperature and aerated", according to the definition given by Technology Mission. Water is essential in food preparation. It is used for a variety of purposes such as to wash food before cooking, to act as a cooking medium and to clean containers of food before and after preparation. Water is the most important beverage. It is, therefore, essential that all water meant for drinking and cooking purposes is free from harmful bacteria. Water used for making ice must also be potable, since it may be added to cold drinks. Contaminated water is dangerous to health and may cause diseases like diarrhoea, dysentery, gastroenteritis, cholera, typhoid, para-typhoid and jaundice.

Contamination and pollution of water

Water gets contaminated in the following ways :

- People defaecating nearby or directly in the source.
- People bathing in stagnant water, washing clothes, utensils etc.
- Washing domestic animals,-(their urine, faecal matter)
- Building toilets/soakage pits near water sources.
- Storing water in unclean vessels.
- Drawing water in contaminated vessels due to ignorance or negligence.
- Discharge of industrial wastes containing a variety of pollutants which are harmful to health.
- Seepage of sewage, which carries many pathogens into water source.
- Sewage contaminating water pipes due to leaking.

Water-borne and water-based diseases, their spread and control

According to WHO estimates (1983), 80 per cent of all diseases in the world is attributable to inadequate water and/or sanitation. This includes the adverse effects of drinking contaminated water, water acting as breeding ground for disease carriers, diseases caused due to inadequacy of washing facilities like water.

Water-borne diseases are many and can be generally classified as shown in Table-1.

Appropriate water purifying and sanitation technologies

Providing clean water supply creates the precondition in which health can improve considerably. The type of technology employed for water and sanitation projects, is not the crucial determinant in their success, but it has a significant role to play in ensuring water purity, easy maintenance, social acceptance and maintaining low costs while spreading services widely. In this endeavour several technologies have been developed to suit varied geographical and local conditions.

As regards water supply, old-fashioned, cast iron pipes were discarded since they failed to withstand use by a large number of community members. Improved Indian model Mark II Hand Pumps were designed and developed which are low in cost and efficient, and popular in rural areas.

Gravity can bring down the water from elevated areas and collected at an intake tank or reservoir. This water can be fed to numerous tap outlets at various locations. Care should be taken to break water pressure en-route and preferably a sedimentation tank can help partial purification by allowing suspended materials to settle down at the bottom.

Open ponds which are often subjected to indiscriminate and improper use, can also be purified and rendered safe. Artifical filtering media of stones, granules and sand can be provided in the filteration trenches linked to the water source.

Since safe water and sanitation are interlinked closely, care is to be bestowed on improving sanitary conditions through appropriate technologies. Traditional latrines of the dry type, scavenging type can be replaced at low-cost by 'pour flush latrines' or 'hand flush water seal latrines'

Methods of Purification of water

The two ways of purification of water are boiling and chlorination.

Boiled water is quite safe for drinking. Boiling kills harmful microorganisms present in the water and thereby improves its hygienic quality.

The usual way of ensuring a safe drinking water supply is to chlorinate the water source as chlorine is the most reliable disinfectant for large scale use. Chlorination of water can either be done by the addition of bleaching powder or chlorine tablets or chlorine gas. At domicilliary level, water can be made safe by adding chlorine tablets which are easily available in the market. The potency of tablets is mentioned on the lable. The chlorine tablets should be used as per instructions. Bleaching powder, on reaction with water, releases chlorine which in turn kills pathogenic organisms. For example a bucket of water (containing about 14-15 litres water) can be purified easily with bleaching powder. Dissolve one teaspoonful of bleaching powder in a glass of water (250 ml). Add 3 spoonfuls of this solution to one bucket of water. Mix it well and allow it to stand for half an hour as chlorine takes some time to act. Availability of chlorine compounds may, at times, be difficult in remote areas, or villages.

For purifying the water of a well, 225 gm of bleaching powder is recommended for a well of 10 ft. diameter and 10 ft. water depth.

There are also other methods of water purification like filteration.

In cities and towns, purification of water is done by Water Works Department. The suspended impurities settle down when the water is allowed to stand in big tanks and aluminium sulphate is added. Further the action of sun-light results in the destruction of bacteria. The next stage consists of filteration through sand. The filtered water is then chlorinated as described earlier.

Approaches needed for successful implementation

of the programmes of SDW and SANITATION.

Analysis of national strategies for improving water supply and sanitation reveals undue priority given to urban needs and affluent groups, over-reliance of centralised management, insufficient use of lower level staff at the field level, and local artisans, and finally standards and technology inappropriate to provide total coverage. Safe water supply and sanitation programmes can succeed only if the following criteria, approaches or principles are applied efficiently in the community :

- Complementary sanitation and water supply development to raise the levels of basic sanitation by well-defined programmes so that health benefits of water supply development can be realised.
- Strategies should give priority to under-served propulation in rural and urban slum and fringe areas which are in greatest need.
- Programmes should serve as model for self reliant, self-sustaining action, founded on a broad-based national strategy, depending increasingly on community re-

sources, adopting lower standards of service, removing constraints progressively through motivation of communities, training more local non-professionals, enlisting community support, *etc.*

(Model programmes stimulate other interested parties and multiplies the benefits of the planning process. Programmes should be flexible, absorb knowledge and experience for orientation of future programmes. Decisions being local, essential responsibility is close to the programme. Technically such programmes are inventive, socially more acceptable and progressive, and possibly better integrated, provided right techniques, right, media for communication are taken care of.)

- Promote cheap, more simple and safe community water supply and sanitation schemes so that the socially relevant systems can be afforded by people and they will try to find more resources to construct and operate them. Water supply and sanitation technology should fit-in with development in other sectors. Appropriate Technology (A.T.) is sufficiently in advance of traditional technology to increase private and social benefits. More sophisticated technologies implemented through centralised agency, staff, had failed in several cases in developing countries.
- Associate the communities in all stages of the projects right from planning to construction, financing, operation and maintenance. Communities and their representatives should play greater part in the 'drinking water, sanitation decade of 1981-1990, initiated by WHO.
- Coordination of water supply and sanitation schemes with other sectors is essential. Poor communities have to increase their incomes if they have to pay for improved services, the reserves from investment on water supply and sanitation will be better and bigger, if these schemes are linked in a development chain.
- It is not just enough to construct more public/private water and sanitation systems. Associations of these schemes with other health improvement schemes is essential. It is not a problem of inter-sectoral coordination but of coordination within the sector itself, since the assocation of water and sanitation with health, warrants such an approach. Dividing the responsibilities for health and water and sanitation may be harmful in the long run.

Technology Mission (TM) for improving drinking water supply systems

Minimum Needs Programme (MNP) of Government of India recognises the importance of rural water supply/sanitation and extends administrative, technical and financial support. National Drinking Water Supply Mission (Technology Mission) Scheme was launched in 1986 in the rural development department, to give a sense of urgency to this project and cover all problem villages by 1990. Sub-missions were set up to eradicate guinea worm, remove excess fluoride, iron and salinity (wherever it is a problem).

Mission's *specific* objectives are :

- Cover 2.27 lakh residual 'problem villages' by 1990. (i.e)
  39% of total villages.

- Supply potable water, 40 Litres per day (LPD) per capita
- Supply water in desert areas :
  40 LPD for human beings,
  30 LPD for cattle
- Evolve cost-effective technology-mix to achieve above objectives.
- Take conservation measures for sustained water supply.

Major obejctives of the TM :

- Identify water source in uncovered areas.
- Use appropriate technologies to ensure that potable water is made avaiblable to the population, using traditional means for such exploitation.
- Monitor quality of the water supply.
- Ensure that quantity and quality of water supply will be sustained on a long-term basis.

Minor objectives of T.M

- Identify water sources through surveys.
- Adopt and improve conventional, non-conventional technologies for achieving cost-reduction, achieve self reliance.
- Prevent pollution of drinking water.
- Educate public to conserve water quantitatively and qualitatively.
- Training of personnel for sustained management of water supply.

Achievements of TM:

T.M. is implementing several schemes under the 4 sub-missions and the achievements are

- Control of brackishness is being tackled by sub-mission and nearly 130 desalination plants are likely to be set up in 2 years.
- Sub-mission on removal of excess iron in water is another important technical package developed by the Technology Mission. Nearly 3000 plants will be set up with assistance from NEERI, Nagpur.
- 'Fluorosis' is one of the diseases occurring in selected areas of A.P., Punjab, etc due to excess amounts of fluorine in water. In view of the adverse effects of fluorosis on the human skeletal system, it has been decided to install about 130 defluoridation plants in endemic areas through the efforts of another sub-mission.

- Guinea worm infestation occurs due to poor quality water supply in some rural areas. Guinea worm eradication steps were promoted by the mission through extension activities and from 12840 village in 1984, the problem villages have come down substantially (i.e.) 3511 in the states in 1988. The programme will be continued with a view to eradicating guinea worm infestation in this country.

Other proposals / activities of the TM are

- Proposes to set up 120 SPV pumping systems in 1988-89.
- 100 quality monitoring water testing laboratories will be set up.
- Dissemination of knowledge on water supply is being carried out by publishing newsletter.
- Coordinating mechanism with voluntary agencies/Govt. organisations like ICDS has been planned.
- Development of shallow well pumps,
- In drought affected areas, action was taken for popularising rainwater harvesting structures. Small towns with population upto 20,000 will be covered for supply of drinking water using low cost technologies. Central assistance is required to be matched against states funding under MNP sector.
- Besides, work relating to rural water supply for SC / ST have been included under the 'Million Wells Scheme' of RLEGP. Under this scheme, during 1988-89 funds were allocated to dig 95930 wells, but as a matter of fact, only 25.5% per cent of the funds could be utilised. The scheme is of 2 years duration only.

Role of CDPO and MO and linkages

The success of 'Health for all by 2000 AD' programme depends, among others, largely on the success of 'Water Decade 1981-1990.' The rural-urban imbalance exists in sanitation and safe water supply management. Between water supply and sanitation itself, there is imbalance, mostly in rural areas. Primary Health Care cannot be achieved by doctors and health workers alone nor can water and sanitation goals be achieved by public health engineers alone or by the health sector/engineers themselves. Inter-sectoral co-operation and collaboration is thus called for, for achieving better health conditions of the people. The importance of safe water supply cannot be ignored in any planning process and hence inter-sectoral coordination and cooperation are essential. The role of CDPO and MO in achieving coordination may be :

CDPO

- Identify problems of water supply with reference to sources, safety aspects, water use.

MO

- Identify diseases which are attributable to water contamination/pollution occurring in the community.

- Study community's problems in getting proper water supplies for drinking and other uses.
- Study community's reaction/interest to get safe water supply for drinking.
- Assist community in installing water sources.
- Educate community on maintenance of water supply sources and importance of clear water supplies.
- Monitor the needs of safe water supply of the community at regular intervals and take appropriate administive/executive action, as needed.
- Provide relief in cases of water-borne diseases in the community.
- Advise the community properly in keeping water sources free from contamination and pollution.
- Educate the community on the ill-effects of water contamination and pollution.
- Interact with sanitarians and public health workers for proper upkeep and maintenance of water sources.
- Monitor epidemics of water-related diseases and take administrative action followed by medical relief.
- Demonstrate water purification measures and prevention of water pollution.

Both CDPO and MO will avail of the assistance of public health engineers in discharging the above responsibilities at the grass root level, in view of the specialised nature of activities.

Table 1: DESCRIPTION OF WATER-BORNE AND WATER-BASED DISEASES, THEIR SPREAD AND CONTROL.

Type	Diseases	Spread by	Description of Transmission	Control measures or action to be taken
I) Water borne	Typhoid, cholera dysentery, gastroenteritis (diarrhoea) infectious hepatitis	I. Drinking water contaminated by faeces. II. Consuming food washed in contaminated water III. Washing hands, face, utensils in contaminated water	I. Pathogenic organism present in excreta transmit diseases through contaminated vegetables, water. II. lack of personal hygiene III. through insects like flies, cockroaches	I. Improve water quality. II. Prevent use of impure water source III. Control flies.
2) Water-insect related	Malaria caused by mosquito)	Mosquitoes breed in stagnant water	Infected mosquitoes transmit the parasites into human body through bites.	I. Improved water surface management. II. Destroy insect breeding places
3) Water-based (through invertebrate vectors)	Schistosomiasis, Guinea worm	Snails, cyclops (act as carriers)	I. Infected faeces reach water, schistosome eggs hatch, embryo penetrates the snail, where infective larvae develop. II. Larvae leave snail and enter into water III. Larvae penetrate into the skin of human body. IV. Ingestion of infected cyclops	I. Minimise need for water contact II. Improve water quality. III. Control vector population.

4) Diseases due to poor sanitation	Diseases caused by hook worm, and whipworm	I. Infectious agents in human excreta, lodge in soil or washed into water source. II. Consumption of polluted water in food can spread disease III. Body contact	I. Eggs of worms are present in faeces or deposited in soil. II. Eggs hatch into larvae and grow in damp soil conditions. III. Larvae penetrate skin of human body.	I. Improve excreta disposal

[SOURCE : "CAN WATER MEAN HEALTH? WATER SANITATION AND SICKNESS" UNICEF NEWS, 116 (1983)2.]

CHAPTER 5

PERSONAL AND FOOD HYGIENE AND ENVIRONMENTAL SANITATION

CHAPTER 5

PERSONAL AND FOOD HYGIENE, AND ENVIRONMENTAL SANITATION

PERSONAL HYGIENE

Introduction

Personal Hygiene and *environmental sanitation* play signinficant role in determining the nutritional level of the community by warding off many common infections. It is, therefore, important that the community is educated about the necessity of developing clean personal habits and how to keep their surroundings clean.

Definition of Personal Hygiene

The word "Hygiene" is derived from the Greek work "Hygeia", the 'Goddess of Health,' who was supposed to look after the health of the people. Hygiene can be defined as the science and art of preserving and improving health. It is science because it is based upon scientiftc knowledge, and an art because it involves the development of skill in the systematic application of the knowledge to the daily routine of life. It includes all such aspects which have a bearing on physical and mental health of a person. Hygiene deals both with the individual proper and the community as a whole. The branch of hygiene that concerned itself with the adjustments which the individual must make to preserve and improve the health of his body and mind is known as 'personal hygiene.' The art and science of maintaining, protecting and improving the health of people through organised community effort is known as 'public health'. It is concerned with the control of communicable diseases in the protection of the community and with furnishing medical services to special groups of persons.

Importance of Personal Hygiene

It has recently been recognised that malnutrition is not only due to dietary deficiency caused by insufficiency of food or poverty, but is a multifaceted problem created by the inter-twining of several factors. Some of the factors which directly affect the nutritional status of the people are food availability, low purchasing power of the people, literacy level, prevalence of conditioning infection, available health serivces and family

size. It is, therfore, evident that nutrition alone is not enough to maintain optimal health and that protection from infectious diseases is equally important, If these two factors *viz.*, adequate food and protection from infectious diseases are not taken care of simultaneously, the human body will remain only a "leaky-pot". Or in other words, all the nutritious food consumed by the person will be leaked out through the infectious diseases like diarrhoea, respiratory infections *etc.*

Developing Clean Personal Habits

Teaching hygiene involves educating the citizens of today and tomorrow and instilling in them a desire to be hygienic in their self and surroundings. Sanitation is a way of life. It is the quality of living that is expressed in terms of clean home, clean farm, clean business and industry, clean neighbourhood, and clean community. Being a way of life, it must come from within the people.

Personal hygiene deals with matters which are the personal responsibility of every person. Personal hygiene is not only concerned with matters pertaining to health of a person but also includes certain personal factors conducive to good health. They are habits, cleanliness of body, clothing, exercise, posture, constitution, environment etc.

Habits

Habits play an important part in the preservation of health. They must be developed and practised in daily living. They are more difficult to change than they are to form. So, good habit should be cultivated right from an early age. Habits are largely responsible for determining one's quality of life. Some of the important ones are as follows :

Eating and drinking habits: It is essential to form a regular habit regarding eating and drinking. Only wholesome food should be taken for the preservation of health. Meals should be taken after due intervals, at fixed hours and quantities compatible with one's work and other physiological needs. Eating, when fatigued, should be avoided. Poor eating habits can lead to indigestion, constipation and obesity or underweight.

Alcohol : It is beverage as well as a narcotic, but its nutritive value is limited. In small doses, it aids digestion or induces sleep, but it has devitalising action upon the tissues, the symptoms of which range from impairment of functions to gross degenerative lesions. The real danger of its use is its habit-forming nature (and for persons having weak self control, it very quickly ceases to be their servant but becomes their master). Use of alcohol and other liquors should, therefore, be moderated or strictly avoided.

Tea and Coffee : Tea and Coffee are not so harmful and they are comparatively less habit-forming than alcohol. In addition to being pleasant beverages they are stimulants, but excessive use of either is not desirable. 'Tannin' present in tea affects the bioavailability of iron present in food. Excessive use of tea and coffee leads to great mental

stimulation, loss of sleep and affects the digestion and erodes the lining of the stomach thus causing dyspepsia, hyperacidity etc.

Smoking and chewing tobacco : Studies have shown that chewing/smoking tabacco can lead to oral/lung cancer. Beedi smoking has been found to be twice as dangerous as cigarettes. Cancer of the mouth can be prevented by keeping the mouth clean and getting jagged teeth repaired or even removed.Cancer deaths can be reduced by early diagnosis, adequate and prompt treatment, identification of causes of cancer by uptodate methods.Today more and more people are not only winning the battle against cancer without getting frightened, but also lead normal lives.

Spitting : Spitting indiscriminately and coughing or sneezing without covering the nose and mouth are not only dirty habits but are harmful as they may cause the spread of various respiratory infections including tuberculosis. Spitting should, therefore, be avoided and proper precautions must be taken before coughing or sneezing in public.

Posture : By posture, is meant the characteristic form in which the body is maintained during its various activities. Good posture consists in alignment of parts in relaxation rather than tension and readiness for action. The vital body functions like respiration, circulation, excretion, digestion and co-ordination of body activities can be carried on unimpeded, when the body is in perfect physiological balance.

Exercise : Exercise is essential for the normal development of the body and perfect maintenance of health. Without exercise, muscles tend to become weak and flabby. It improves all the vital activities of the body like respiration, circulation, perspiration, excretion, digestion and metabolism. The mind is refreshed and the powers of observation, precision and tolerance are developed. Exercise should preferably be done in the early hours of the morning or in the evening. It should not be taken within two hours of a heavy meal. Games should be encouraged since they combine recreation with exercise. The right type of exercise should be selected keeping in mind the age and physical condition of a person.

Fatigue : The feeling of weariness is known as 'fatigue'. Fatigue reduces both the output as well as quality of work which one can normally deliver . Worry infrequently is a forerunner of fatigue. Over-fatigue results when we use up physical energy faster than it is restored. The normal human cycle is like the activity-fatigue-rest. This cycle is an universal phenomenon in life. The accumulated wastes and poisons of fatigue are carried off by the blood during rest and sleep. Adequate rest and sleep are, therefore, necessary to avoid fatigue. The art of relaxation can also help to overcoming fatigue.

Sleep : Sleep signifies rest of the brain. In fact, it is time for the repair and refreshment of the whole body and mind. The amount of sleep required varies with age. For those who are enganged in mental work, sound sleep is rather more necessary than those engaged in physical work. The bedroom should be well ventilated and drugs should never

be used to induce sleep except in illness and that also with discretion, under medical supervision.

Sleeplessness : It is a condition which is incompatible with physical and mental health. There are many factors which may cause sleeplessness. Emotional disturbances, excitement at bed time, improper food, insufficient food, insufficient amount of exercise, studying late at night, inability to bar from mind the events of the day, constipation or worrying over real or prospective troubles, may keep one awake. 'Insomnia' is more prevalent among brain workers than among those who do physical work. Having regular bed time just before going to sleep, assuming calm mental and emotional attitude on retiring, taking light physical exercise at bed time can help to overcome insomnia. An individual troubled with insomina should not subject himself to worry about it. Freedom from anxiety removes to a large measure the harmful results of loss of sleep and produces an attitude of confidence which tends to induce sleep.

Cleanliness of body

Cleanliness is equally important for the normal growth of body. In order to remain healthy, one must develop clean personal habits. Some of the points for consideration are:

Bath : It is necessary not only for cleanliness but also for its beneficial action of the skin and internal organs. A dirty skin is likely to get infected with pimples, boils, sores, scabies, or ring-worm. Regular bathing at least once a day using soap and water is, therefore, essential.

Hand washing : Hands must be thoroughly washed with soap and water after defaecation, before preparing or serving food and before meals. Hands must be thoroughly washed frequently, particularly after using the toilet. Scrupulous cleaning of hands with soap and water is essential to prevent spread of infectious diseases. After washing hands, they must be dried with a clean towel or cloth.

Finger Nails : Finger nails should always be kept short and clean, as dirt can easily lodge under the nails and may carry infection. Nails can be cleaned using clean old tooth-brush with soap and water. Keeping the nails short and clean, will prevent worm infestation and diarrhoea.

Hair : Hair should be washed at least once a week or more often during the hot weather in order to keep it clean and free from lice. Hair should be combed at least once or twice daily. Hair which are not cared for, are likely to develop dandruff and may fall easily. Mothers should inspect their childrens' hair daily preferably with a fine- toothed comb, so that any lice or mites can be detected early and removed. Lice, if present, can be removed in the following way - cut the hair shot, if possible. Wash the hair,with soap and hot water. Apply DDT or GAMMEXINE powder formulations to the scalp. Cover the whole head with a cap or scarf overnight. Next morning comb the hair with a fine toothed comb

and remove lice and mites. Wash the hair with soap and hot water. Repeat treatment after ten days until no lice remain. The hair should never be scratched, combed or touched in the kitchen to prevent them falling into food articles and germs can be transferred by the hand to the food.

Mouth : Many germs can thrive in the area of the mouth. The mouth or lips should therefore, not be touched by the hands particularly while working in the kitchen. The tongue should be cleaned throughly every morning and the mouth should be cleaned by gargling in the morning and at night after taking the last meal or drink.

Teeth ; Healthy teeth are essential for good health and nutrition. They must, therefore, be looked after to avoid decay. This can be done by daily brushing the teeth to remove the food articles, rinsing the mouth after each meal and reporting to the health worker if a person has a severe toothache. The teeth should preferably be cleaned at least twice a day i.e. in the morning and at night before going to bed. Gums should also be looked after properly so that they are strong and can hold the teeth firmly.

Ears : It is dangerous to poke sticks or hair-pins into the ears to remove wax as this can cause injury or infection of the ear. This habit should be avoided. Infact, for removing wax, one may use ear buds.

Eyes : Eyes are vital organs of the body and any inflammation or injury to the eye should receive immediate attention. The infection present in the discharge of the infected eye is transmitted to the healthy persons through handkerchiefs or towels soiled with discharge or by direcct contact with the eye of an infected person. Eye infections are also spread through flies. The following precautions should be taken to prevent eye infections. Avoid the use of common towels or handkerchiefs for wiping the eyes, avoid the use of common sticks for applying surma or kajal to the eyes; not exposing the eyes to dust and smoke and allowing flies to settle on the face and eyes. The use of surma or kajal should be avoided as it does not confer any benefit . The eyes should just be cleaned properly with clean water as often as necessary or possible.

Nose : The nose can harbour vast number of harmful bacteria and should therefore not be touched when food is being handled. It is also important that eating places or working surfaces are not sneezed over as it spread germs. The nose should thoroughly be cleaned everyday while having bath. After blowing the nose, it is essential to wash hand/fingers thoroughly to prevent spread of infection.

Feet : Care of the feet is important and they should be washed, cleaned regualrly and the nails kept short and cleaned as often as possible

External Genitals : Sex organs require cleanising like any other part of the body. Since a slight carelessness in this respect can give rise to various types of infections, which can be sexually transmitted.

Clothing : Clean clothes should be worn at all times. Clothes should be washed daily and dried. The clothes should never be dried on grass or grounds as it may carry infection. The undergarments should particularly be cleaned everyday. Care must be taken while selecting clothes also. In summer, cotton clothes are more comfortable than synthetic fibre materials. Clothes of persons suffering from any infectious disease, should preferably be washed in water with mild anti-septics or boiling water, dried and then kept separately.

Improving health status by proper education on Hygiene

Control and prevention of diseases due to practising/adoption of improper hygienic habits, can be achieved by educating the masses with appropriate campaigns of health and nutrition education. Some of the important aspects which require to be passed on to community in the area of hygiene are discussed separately under the chapter 9 on Health and Nutrition Education.

Roles of CDPO and MOare summarised below :

CDPO	MO
Assess the hygienic problems of family members and personal habits.	Identify public health related hazards arising out of imporper personal hygiene.
Chalkout strategies of implementation to improve personal hygiene of the community.	Suggest measures for improving personal hygiene standards for adoption by community.
Enlist cooperation of community/other Govt officials for programme implementation.	Organise public health campaigns to promote personal hygiene.
Discuss resources mobilisation with the community/Govt. officials.	Interact with CDPO and other officials in problem identification and programme implementation.
Home visits/Community contact for surveillance of personal hygiene.	Organise and participate in intersectoral coordination meetings.
Organise campaigns/intensive drives to ensure community participation to improve personal hygiene of the community.	
Establish community level contacts with opinion leaders, women's groups, volunteers *etc.* from planning to implementation.	

FOOD HYGIENE

Introduction and definition of the problem

'Food hygiene or sanitation' covers all those measures which are necessary to ensure the safety, wholesomeness, and soundness of food at all stages from its growth/ production or manufacture until its final consumption. This entails proper food handling and the aim is to prevent food spoilage and poisoning and other food borne illnesses. Hygiene also includes measures to maintain proper food standards and the safety of additives to foods.

Foods responsible for causing food borne diseases

Foods most commonly found to be responsible for food borne diseases are milk, and milk products, meat, fish and shell fish, eggs, vegetables eaten raw (contaminated by faecal borne bacteria, amoeba and other parasites, chemical sprays etc.. Certain vegetables contain intrinsic, toxic substances which can cause illnesses with typical symptoms.

Classification of food borne diseases

Food-borne illnesses can be generally classified with reference to their causative agents and mode of infection as given in Table I.

Food Storage Hazards

Foods of animal origin stored unhygienically act as favourable bacterial cultural media. When contaminated, they produce and transmit large doses of toxins. These toxins cause gastroenteritis-like symptoms. Toxins are not destroyed by heating and thus pose serious health hazards. Contaminated, cooked foods, cooled to room temperature, produce toxins, even if the food is refrigerated.

Vegetables get contaminated both at the site of production or marketing yards, specially with faecal borne bacteria or amoebae or other similar parasites, when human excreta is used as manure.

Food handling hazards - Some examples

There are several illustrative examples which show hazards in food handling, some of which are as follows :—

- Rodents, cockroaches, and other pests contaminate food through their nibbling habits/excreta.
- News paper wrappers (used to cover items like bread) are strictly not free from bacterial contamination, unless they are very carefully stored, handled and used in bakeries/grocer's shops.

- Exposure of cut fruits/vegetables or any article of food without food covers or other protection.
- Unwashed hands, improperly cleaned containers (which are unclean), specially in food handling/serving establishments.
- Human carrier, (a careless food handler) in community feeding/institutional feeding.
- Bacteria (pathogenic) thrive or survive on crockery, glassware, cutlery, containers, utensils etc. and cleaning them scrupulously is very important to avoid spread of food-borne diseases.
- Hygienic conditions of most vegetable/fruit markets are often extremely poor, since they are not properly maintained.

Hygiene in the Homes

Several reports are available to highlight the fact that lack of proper 'home-hygiene' is one of the crucial factors in the incidence and spread of disease rather than community food handling. For example,' weaning diarrhoea' is rarely due to 'eating out' and more essentially due to contamination 'at home'. Some of the important factors for consideration in home hygiene may be as follows

- Lack of availability of safe, protected, piped water supply specially in rural areas.
- Use of unclean vessels in lifting water from village wells.
- External seepage of unsafe water into wells/pumps.
- Insanitary and often inadequate facilities for disposal of liquid/solid wastes.
- Lack of composting arrangements to conserve animal wastes (since animals are invariably domesticated in rural household close to residence).
- Lack of sense of personal hygiene (poor or lack of facilities for washing hands after using toilets, while handling/serving food etc.).
- Keeping cooked food uncovered till use.
- Use of unclean vessels for storing cooked food and serving food for family members.
- Lack of proper food storage, waste disposal to prevent insects/vermins attack.

Hygienic conditions of market

Market places constitute the focal points for assembly, as well as distribution of various food items (including fruits and vegetables), besides running eating houses for the working people and other clientele. It is important to ensure high standards of cleanliness

and hygiene, as under :

- Adequate space, ventilation and lighting.
- Well drained floors, which are connected to good drainage facilities.
- Adequate, safe, protected, potable water supply for drinking and water for washing purposes. (not necessarily of potable quality).
- Cleaning as often as possible to get rid of rubbish and refuse material.
- Removal of garbage/refuse at regular intervals, and their disposal.
- Provide sanitary latrines.
- Control measures to eradicate rodents/flies etc.

Principles for the control of food-borne diseases

The following main principles may be kept in view for the control of food-borne diseases.

- Isolate affected persons and provide treatment.
- Disinfect the room, furnishings, bedding and objects used/handled by the patient soon after recovery.
- Maintenance of personal hygiene of food handler.
- Inspection of condition of preparation, handling, carrying and storage of food. Also inspect the manufacturing premises, and equipment besides the persons involved,
- Regular inspection of food stuffs for any spoilage
- Appropriate processing like pasteurisation, High Temperature, Short Time (HTST), Ultra Heat Treatment (UHT), chemical additives.
- Keeping premises of preparation and manufacture and equipments clean.
- Ensure protected water supply which is safe and pure.
- Prevent entry of rodents, pests to food and inside the premises.
- Control breeding places, destruction of adult insects/rodents etc.
- Maintain strict personal hygiene.
- Since food handlers (when infected) can spread diseases like dysentery (amoebic and bacillary), typhoid and para typhoid fever, viral hepatitis, ascariasis, salmonellosis, and staphylococcal infections, food handlers are to be examined and investigated to prevent

any chance of contamination. Any person suffering from communicable diseases should be kept away from food handling/serving etc.

- Finger nails, hands, hair and overalls of persons handling food should be scrupulously clean and food handlers should be properly educated on various aspects of personal hygiene.
- Kitchen practices like, delivery of food, preparation, cooking, serving should be followed by appropriate action in the kitchen like care in handling, thoroughly cleaned liveries, safe methods of cooking etc.
- Sanitation in the eating places should be of the highest order.

Control measures

Various processing technologies such as heating, drying, salting, pickling in vinegar canning, (thermal processing), cooling (to 10° C or lower), freezing, freeze drying can minimise the bacterial multiplication to a great extent. Permitted chemical preservatives can also be added in approved doses as per the regulatory aspects in force in the country. Ionising radiation is sometimes used for similar purposes so that the life of the food products can be prolonged besides making them free from several health hazards. Store the food grains and other food materials in closed containers without allowing access to moisture, rats, insects etc. Fruits and vegetables, to be eaten raw, should be thoroughly washed in clean water.

Organisation and legislation for food standards

The Government of India has set up several agencies which are responsible for drafting and updating all aspects of food standards in the country and the most important ones are

- Agmark
- Fruit Products Order, 1955, (FPO)
- Army Purchase Organisation (APO)
- Meat Inspection Control Order
- Indian Standards Institution (ISI) now Bureau of Indian Standards (BIS)
- Vegetable Oil Products Control Order

This list is illustrative but not exhaustive. Some of the protocols of food regulation are voluntarily implemented whereas some are mandatory.

Role of CDPO and MO and linkages

MOs and CDPOs are key professionals responsible for the health sector and social welfare respectively, in the ICDS projects. However, the delivery of services in both the sectors can be efficient, only if there is a well coordinated approach, notwithstanding the fact, that the professional skills are vastly different. Their coordinated approach with linkages at grass root level field functionaries will ensure that the services are delivered at least-cost and without any leakage. Their individual responsibilities may be summarised as under :

CDPO	MO
Survey the community to identify food handling hazards.	Carry out surveillance for outbreak of food related diseases.
Ascertain the willingness of community to adopt improvised facilities, to improve standards of hygiene, relating to food.	Assess the existing conditions for disposal of wastes in the home, market places *etc.*
Prepare inventory of availability of men, materials and money for improvement in hygienic conditions at home, market *etc.* to minimise food handling hazards.	Identify appropriate technologies for different types of waste disposal systems to ensure food hygiene conditions properly.
Carry out contact programmes with the masses for introducing newer and low cost hygienic improvement programmes.	Interact with public health experts in R&D work and update technology, for better hygiene.
Survey homes and markets especially in times of out-break of food-borne infections.	Control outbreaks of food borne infections and contamination.
Organise visits to markets and homes for performance assessment of hygiene improvement programmes.	Monitor the programme of hygiene improvement and study its impact on the quality of life.
Conduct sectoral level meeting for on the spot assessment of hygiene improvement programmes.	Organise integrated training programmes to update the knowledge and skills of field level functionaries, on food hygiene.

CDPO and MO may also enlist the cooperation of food scientists and technologists, food standards specialists to bring about desired levels of improvement in food preparation, processing and distribution.

ENVIRONMENTAL SANITATION

Definition

Sanitation is that branch of public health which is concerned with keeping the external environment healthful. The word 'sanitation' is derived from the Latin word "Sanitas" which means 'a state of health'.

'Environmental sanitation' means the control of all those things in man's surroundings which cause bad effect on his body's development, his health and his length and quality of life. In other words, environmental sanitation is the cleanliness of house and surroundings of man. The sanitation directs efforts towards the maintenance of safe drinking water free from pollution and harmful organisms, controls the disposal of sewage, conducts inspection of sanitary conditions of food supply, enforces housing regulations and supervises the control of rats, flies, mosquitoes and other intermediate sources of disease transmission.

Diseases caused due to poor sanitation

Poor standards of sanitation, whether urban or rural settlements, is responsible for spread of many infectious diseases by infective agents present in human excreta, which gets lodged in soil or washed into a water source. Consumption of contaminated food, water or body contact, spread the disease. Eggs of hook worm, round worm, and thread worm hatch into larvae and develop in the damp soil. Larvae of hookwrom can easily penetrate into the body of human beings and produce disease symptoms.

Hygienic disposal of Waste water (i.e, liquid wastes)

Water collections around the houses are a health hazard as they lead to mosquito breeding. Collection of waste water gives rise to unplessant odours. Waste water can be safely disposed of by constructing pits or using in kitchen gardens, where possible.

'Soakage pits' provide a hygienic method of disposal of waste water as they are cheap and easy to construct. A soakage pit is a dug-out space filled with stones or overburnt bricks. The waste water from the house is led through a drain to the soakage pit which seeps gradually into the ground. This reduces the danger of polluting wells in the vicinity. A field level worker can help the community in constructing soakage pits with the help of health workers.

A kitchen garden can provide fruits and vegetables for improving the nutrition of the family besides providing a hygienic way of disposing waste water from the house. If the household is small, the amount of waste water is limited and can easily be disposed of by diverting it into a kitchen garden . Maintenance of kitchen gardens is both easy and

cheap. A field level functionary can help the families to start a kitchen garden with the help of the horticultural workers in the area.

Disposal of animal manure and solid household waste :

Indiscriminate collections of refuse lead to fly breeding, attract rats and dogs, are unsightly, and cause unpleasant odours. Refuse should not be dumped in drains as the latter gets choked and produces stagnant water collections which lead to mosquito breeding. Refuse should be properly disposed of by composting, burying or burning.

Animal manure and the solid household wastes can be hygienically disposed of by 'composting'. An advantage of this method is that the resulting compost can be used as a fertilizer. This pit should be located at a safe distance from house but away from the water source. Dig a pit of 4 x 3 x 1.2 meter or 3 x 2 x 1 m Size. Instruct the family to fill the pit with layers of refuse and cowdung in the ratio of 3; 1 by volume until the whole content of the pit reaches 30 cm above ground level. The uppermost layers should consist of refuse. Leave the filled pit for 6 months, after which the compost can be used as the fertilizer. When the pit is full, dig another pit.

Hygienic disposal of excreta

Unhygienic disposal of human excreta leads to disease transmission through flies settling on food, drinking polluted water, eating contaminated raw vegetables and walking barefoot. The proper disposal of human excreta by the use of sanitary latrines is primarily the responsibility of the house owner. A sanitary latrine is a safe and hygienic way of disposing the human excreta.

A sanitary latrine is a water-seal type of latrine. Sanitary latrines must be simple, easy to construct with locally available materials, cheap, easy to maintain, acceptable to the user, able to provide adequate shelter from the sun, wind and rain and the desired privacy.

A sanitary latrine must be maintained in good condition as follows :

- The water-seal should be sufficient.
- The latrine should be cleaned regularly/daily.
- The latrine should not be blocked by throwing rubbish into it.
- The latrine floor and super-structure should be kept in a good condition.
- When the latrine pit is full,second pit has to be prepared and used.
- The filled pit is left for six months after which it is to be emptied and the contents used as manure. The pit is then ready for re-use.

Well maintained latrine will have the following characteristics. The excreta is not exposed to flies and other insects and is not accessible to animals. It is free of any offensive odour. It is not unsightly. Infact use of sanitary latrine should become a way of life in the community.

A field level worker can assist the households in procuring the materials for constructing the latrine and ensure that the latrine is properly used and maintained.

Home Sanitation

A clean home leads to good health. The house should be cleaned daily. Storage space,almirahs, walls, ceilings etc. must be cleaned periodically. The house must be preferably white-washed once a year. The characteristics of a good house in rural areas are as follows.

- It is well-built with a tin or pucca roof.
- The floors and walls are smooth and can be easily cleaned.
- The house is well ventilated.
- There is sufficient natural light and sun shine.
- It has a sanitary latrine.
- Waste water drains into soakage pit or a kitchen garden.
- If the house does not have its own well, hygienic arrangements of water strorage are to be provided.
- Compost pit or a place for burying or burning refuse is to be provided.
- The refuse is collected in covered bins in the house before putting the contents into the compost pits.
- Poultry and live stock are kept in a separate place.
- The kitchen is free from smoke
- Foodgrains and other foods are stored properly so that insects and vermins cannot reach them.
- There is no over-crowding.

Smokeless Chullhas

Smoky kitchens are not only uncomfortable to work but are a health hazard as the irritation of the eyes caused by the smoke pre-disposes to eye infections. Besides

this, the open chullha consumes more fuel and the smoke discolours and damages the walls. The smoke nuisance can be avoided by the use of 'smokeless chullhas' in which the smoke is led out of the kitchen through a chimney.

The chullha is about 75x20 cm and is built of mud mixed wth straw. The chimney is made of clay-pipes 10 cm in diameter placed one over the other and tapering 8.75 cm at the top. The chimney projects beyond the roof by 60 cm and rain water is prevented from entering it by placing a hood or cover over the outer-end.

The advantages of a smokeless chullha are:

- It prevents the accumulation of smoke in the kitchen which causes irritation of the eyes and eye infection.
- It helps in having a neat and clean kitchen.
- It is very simple, cheap to construct and easy to maintain.
- The consumption of fuel (firewood or cowdung) in a smokless chullha is less than in an open smokey chullha.

Control of insects, rodents and stray dogs

Some insects are responsible for causing certain diseases. For instance, mosquitoes cause malaria and filariasis (elephantiasis), flies spread cholera, typhoid, dysentery, diarrhoea, trachoma etc., fleas cause plague and sand flies cause kala-azar. It is, therefore, essential to prevent breeding of these insects. Cleanliness of houses and surroundings is important to prevent the menace of these insects. Some of the points for consideration for preventing the breeding of different insects are as under:

Mosquitoes: Removing all stagnant water collections: for example in pot holes, cesspools and using spraying and larvicidal measures, at regular intervals.

Flies: Most important fly control measure is the elimination of breeding places which can be done by improving the sanitation. Garbage, waste food and other refuse of the house should be stored in bins with lids. It should not be thrown outside the house or in the neighbourhood. The refuse should ultimately be disposed of properly, for example through hygienic compost pits in rural areas. Open air defaecation should not be allowed. Vomitus and sputum should be properly disposed of. Kitchen should be kept clean. Use of cut fruits, sweets etc. which have been exposed to the flies should be avoided. Doors and windows should have wire-mesh netting, wherever possible, Use of insecticides should be minimal, as they may pollute our environment, and contaminate our food, if used undiscriminately.

Fleas: By exposing the bedding to sun-light, keeping domestic animals and poultry clean, preventing rats from coming near human habitations, and using insecticides wherever possible.

Sand-flies: By preventing crevices and cracks in walls and floors by filling and plastering.

Rats: Besides consuming articles of food, rats are carriers of serious diseases like plague. As rats breed very rapidly, it becomes necessary to control their population by properly disposing the refuse, storing food and foodgrains in rat-proof containers and rat- poisoning, trapping for killing the rats.

Stray dogs: They are a potential hazard as their bite can cause rabies. There is no cure for rabies and therefore, it is essential that stray dogs are removed from the domestic area. Domestic pet animals should be prevented from coming into contact with stray dogs and should b e protected by anti-rabies vaccines.

Special Features of Rural Sanitation

Rural sanitation is vastly different from that of the urban areas due to interplay of variations in soil type, climate, culture, tradition, besides physical conditions like availability of water. Different levels of technologies need to be identified and applied and more recently the 'bio-gas technology' appears to have made some headway in several states. Improvement of rural sanitary conditions using locally available resources of men, materials and money could provide immense scope for skilled and unskilled section of the society and act as an income generating, employment generation activity. Villagers need to be educated on the various aspects of spread of water-borne diseases like gastro-enteritis, diarrhoea, malaria, guinea-worm etc. The 'spin-off' nutritional benefits should invariably be emphasised during health promotion campaigns.

Important Measures for Improving sanitation

Since bad sanitation adversely affects the health and nutritional status of the community, several programmes for improving the sanitary conditions in urban and rural areas had been taken up during the last three decades or so. Even rural sanitation has received enormous attention recently, so that some bad old traditions are being given up, though some what slowly, and modern sanitary habits are being brought to the door steps of the rural poor. Some of the achievements may be summarised as under:

- Reduction in the habit of open air defaecation.
- Introduction of pour-flush latrines and other sanitary latrines, like the 'water-seal type'. Pour flush latrines require hardly 5-10 per cent of water normally required by standard water closets (i.e., 1-2 litres against 20-25 litres.) The waste is washed through a seal pan. The waste-water is led to a 'soak pit' constructed some distance away.
- Providing good sewage systems with proper sewage treatment facilities.
- Since western style sewerage systems may be very costly, appropriate technologies like the ones promoted and popularised by the voluntary agencies like SULABH INTERNATIONAL may be adopted.

- Priority attention to provide sanitary facilities should be directed towards the economically weaker sections (slum dwellers, houseless populations, the rural poor, tribals etc.).

- Motivate the community to convert the waste into wealth by improving the collection and disposal systems for solid wastes.

- Compost preparation and bio-conversion technology to suit local conditions at reasonable cost should be identified.

- Existing waste disposal systems should be geared up for greater efficiency.

- Regular training programmes of peripheral level health personnel is essential.

- Health education campaigns relating to improved sanitation should be organised regularly to focus the attention of the community to the hazards of bad sanitation vis-a-vis improved sanitary conditions.

- Integrated developmental programmes covering the areas of water supply, drainage, sewage, disposal of solid wastes/liquid wastes will be economical and cost-effective.

- Citizens cooperation, self-help and participation are essential for the programmes to succeed.

Government's efforts

Promotion of rural sanitation forms point 8 of the New 20 Point Programme 1986. The Central Rural Sanitation Programme (CRSP) was launched in 1986-87 in different states/U.Ts for improving sanitary facilities through construction of sanitary latrines for individual households and supplementing the efforts of the states/UTs under the state sector' Minimum Needs Programme (MNP) and under other centrally-sponsored programmes like NREP/RLEGP etc. Since 1988-89 community latrines attached to village level institutions like schools, panchayat ghar, PHC, AW centres are under taken under NREP/RLEGP Under the CRSP, and MNP in the states sectors, the financial and physical progress during the years 1987-88,, 1988-89 were lower than the targets fixed.

Physical and financial performance of sanitation programmes

One of the items permitted by Govt.of India. under NREP includes rural sanitary latrines which shows GOI's concern to improve rural sanitation. Approved outlay of the Dept. of Rural Development during the 7th Plan was Rs. 4.0 lakhs for sanitation and the outlay was increased to Rs. 20 lakhs each financial year 1987-88 ,1988-89.

The Council for Advancement of People's Action and Rural Technology (registered in Sept., 1986) , CAPART an autonomous body under the Deptt. of Rural Development, promotes voluntary action in rural development. CAPART coordinates all

efforts towards generation and dissemination of technologies relevant to rural upliftment. Between 1985-86, and 1987-1988, nearly 282 Central Rural Sanitation Programmes were sanctioned by CAPART.

Better environment is associated with better nutritional and health status. Impact of sanitation can be seen in the community if an integrated approach is made linking other factors like availability and utilisation of health facilities and literacy levels since majority of rural people are not only illiterate, they are poor also. The message is clear: Good sanitation makes difference between health and disease.

Role of MO and CDPO and establishing linkages

ICDS projects have two distinct streams of activities to provide health and social services and are assisted by medical and paramedical personnel in the health sector and extension staff for the delivery of social services. ICDS concept relies upon the vertical and horizontal linkages to be established so that the resources are utilised in a cost-effective manner without any leakage. Therefore, field level coordination through appropriate linkages should be ensured for delivery of services in the health sector and welfare sector.

The responsibilities of the functionaries in the two streams may be summarised briefly as under:

CDPO	MO
Identification of the sanitation problems from records and prepare inventory of local resources.	Assessment of the problems of sanitation and environment.
Identify the possibilities of developing kitchen gardens, use of waste water, use of manure from compost pits.	Prevalence study of sanitation related problems.
Help community to develop kitchen gardens and utilise the produce at home.	Suggest remedial measures for sanitation problems.
Promote improvised, efficient technologies like smokeless chullah.	Implement the measures through paramedical and other extension staff for better sanitation.
Identify appropriate insect control measures and propagate them among the community.	Intervene in case of deficiencies, suggest remedial actions and follow up.
Ensure coordination with MOs for field visits.	Attempt coordination with welfare sector through CDPO.

Ensure H & NE classes are carried out on problems-oriented basis to improve sanitary conditions at home and environment.

Interact with specialists (Wherever applicable) for better sanitation and environment.

Attend monthly progress review meetings for problem identification and plan remedial measures, introduce innovative approaches to raise the levels of sanitation, and improve environment for healthful living.

Provide advise through H & NE to improve sanitation.

Mobilise community resources

Sectoral review meetings (SLMs and monthly meetings) should be convened regularly as per time schedule to review the performance of the programmes and take mid-course correction, as and when necessary, after mutual cunsultations between health and social welfare sectors.

It shall be the joint responsibility of both CDPO and MO for updating the knowledge and skills of their officials in implementing effciently the integrated training programme covering all aspects fo Health and Public health, Nutrition, Immunization, Personal Hygiene, Food Hygiene, Environmental sanitation in food and non food sectors.

Table 1: FOOD-BORNE DISEASES

DISEASES	CAUSATIVE ORGANISM	VECTOR OR MEANS OF SPREAD
1. Bacterial		
Anthrax	*Bacillus anthracis*	Contaminated meat
Botulism	*Clostridium botulinum*	Anaerobic growth of spores in adequately processed, canned or bottled food
Cholera	*Vibrio cholerae*	Contaminated water or food; flies
Dysentery bacillary	*Various species of genus Shigella*	Contaminated water or food; flies
Paratyphoid fever	*Salmonella spp.*	Contaminated food, particularly milk and milk products, shellfish, flies
Salmonellosis	*Salmonella spp.*	Contaminated food, particularly meat and meat products, and milk products
Staphylococcal infections	*Staphylococcus spp.*	Food contaminated from human sources
Streptococcal infections	*Streptococcus spp.*	Food contaminated from human sources
Tuberculosis	*Mycobacterium tuberculosis*	Contaminated milk, milk products and meat
Typhoid fever	*Salmonella typhi*	Contaminated water and food, particularly milk, milk products and shellfish
2. Parasitic		
Amoebiasis	*Entamoeba histolytica*	Contaminated food, particularly vegetables eates raw; water
Ascariasis	*Ascaris lumbricoides*	Contaminated vegetables eaten raw
Clonorchiasis	*Clonorchis sinensis*	Raw or partially cooked infected fresh water fish
Diphyllobothriasis	*Diphyllobothrium latum*	Raw or partially cooked infected fresh water fish
Enterobiasis	*Enterobius vermicularis*	Contaminated food
Fasciolopsiasis	*Fasciolopsis buski*	Contaminated vegetables eaten raw
Hydatidosis	*Echinococcus granulosus*	Contaminated food and water
Taeniasis and cysticercosis	*Taenia saginata*	Infected beef
	Taenia solium and its larval form Cysticercus cellulosae	Infected pork
	Trichinella spiralis	Infected pork
	Trichiura	Contaminated food

Source: The Health aspects of food and nutrition (1969). Western pacific region, WHO, Manila.

CHAPTER 6

NATIONAL DIARRHOEAL DISEASES CONTROL PROGRAMME

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NATIONAL DIARRHOEAL DISEASE CONTROL PROGRAMME

Introduction :

Diarrhoea is defined as passing of three or more loose or watery stools in a day. Frequent passing of normal stools is not diarrhoea. Breast-fed babies often have softer stools than normal. Diarrhoea is most common in children, especially those between 6 months and 2 years of age. It is a major killer of children below the age of two years. The dreaded disease is caused by toxins or germs, too small to see. The causative agents for diarrhoea thrive in dirt and dust, dirty water, unhygienic food and the human excreta. Many of us, due to sheer ignorance unknowingly invite the disease to our homes where children are at high-risk to suffer the disease and sometimes succumb to illness.

It has been estimated that annually there are over 1400 million episodes of diarrhoea in children under 5 years of age in Africa, Asia and Latin America. This results in five to eighteen million childhood deaths per year. It is suggested that every six seconds a child dies of diarrhoea at some place in the world. One out of every ten children born in a developing country dies of diarrhoea before reaching the age of five. The greater tragedy behind this fact, is that all or most of these deaths are preventable and that too, does not require sophisticated or expensive means.

ICDS studies on morbidity and infant mortality have recorded diarrhoea as the second major killer disease next to fevers (20% of the infant deaths). It is also the most important cause of morbidity in infants. An infant has estimated risk of 3.7 episodes of diarrhoea annually. Diarrhoea is also the common cause of morbidity (56%) and mortality (32.7%) in 1-3 year old children.

National Diarrhoeal Diseases Control Programme

Objectives

The National Diarrhoeal Diseases Control Programme (NDDCP) was launched in the country during the sixth five year plan (1980-85) with the following objectives :

- Immediate : to reduce mortality from acute diarrhoeal diseases as well as associated ill-effects, particularly malnutrition in children.
- To reduce the morbidity from acute diarrhoeal diseases in the total population including children.

- To prevent and control diarrhoeal diseases so that they are no longer a major public health problem.

Considering the importance of child survival in the overall context of family welfare, Government of India has accorded high priority for the programme of the control of diarrhoeal diseases as a part of the package of the services rendered under the M.C.H. programme. The objectives of this integrated approach are as following :

- Creating awareness in the community that most diarrhoea cases can be managed at the house-hold level itself by using simple home-made solutions
- Educating mothers on appropriate feeding practices during and after the diarrhoea
- Equipping the house-holds, mainly the mothers with the necessary skills to diagnose a case of diarrhoea, use of home available fluids (HAF) and administration of these to the child
- Making widely available pre-packed ORS for dealing with the cases of acute dehydration and
- Reducing mortality from dehydration in acute diarrhoeal diseases in children below 5 by about 40-50 per cent during 1985-90.

The beneficiaries of the programme are children below five years of age. It has been estimated that 10 per cent of the children suffering from diarrhoea become dehydrated. One out of ten of those dehydrated children develop severe dehydration. In a block (average population 1,00,000), thus, 30,000-45,000 children per annum develop diarrhoea. It is neither feasible, nor necessary for the medical officers to examine all the cases. The mothers, after simple health education, can manage most of the children suffering from diarrhoea by home available fluids (HAF). Further, only a very few children will develop severe dehydration if the village level health workers manage most of the children with mild dehydration by oral rehydration solution (ORS). The medical officers will then be left with the responsibility to manage a few severely dehyrated cases of diarrhoea referred to the PHC.

Organization

The DDC programme, was started in the UIP districts. Gradually other districts are being included in the programme so as to cover the whole country by 1989-90.

The programme is managed by separate section, headed by a full time Programme Manager - a technical person under the Jt. Secretary, Incharge of Maternal and Child Health Services with appropriate staff. Currently, it is implemented as a part of the package of MCH services by the State/U.T. governments within the broad framework of guidelines provided by the Union Ministry of Health and Family Welfare of the Government of India.

The programme is being monitored by the state EPI/MCH officers who guide and supervise its implementation at the district level. The 17 Regional Directors of Health and Family Welfare are actively involved for better implementation of this programme. The District Medical and Health Officer is overall incharge of the programme assisted by the District Immunization Officer and District Public Health Nurse. The Medical Officer-in-charge has the overall responsibility of implementation and monitoring the programme. The other medical officers assist him in carrying out the programme activities assigned to the PHC. The health supervisors (both male as well as female) supervise the work done by the Multi-Purpose Health Worker (MPHW) and AWW at the village level.

Programme Contents

The main components of the programme are :

- Training
- Health education of the population through print and mass media.
- Supply of oral rehydration fluid
- Monitoring and evaluation

Training

All the workers concerned with the delivery of the health care system are being trained so as to implement the programme successfully. Following are major components of training :

(A) *Assessment of dehydration* :

A grave consequence of diarrhoea is dehydration. Thus, its assessment is the first step in its management. When a mother brings a child with diarrhoea as the main or one of the complaints, the following procedures should be followed for the assessment of diarrhoea :

ASK the following questions :

- How many liquid stool per day does the child pass ?
  For how long has the child had diarrhoea ?
  Is there any blood and mucus in the stool ?
- Has there been any vomiting ?
  If so, has it been more than a small amount ?
  How frequently has the child vomited.
- Is the child able to drink ?
  If so is he thirstier than normal ?

- Has the child passed urine in the last 6 hours ?

  If so, is it a normal amount or a small amount ?

  What is the colour of urine ?

LOOK for the following conditions :

- How is the child's general condition ?

  Is he well and alert ?

  Is he unwell, sleepy or irritable ?

  Is he severely undernourished ?
- Does the child have tears when he cries ?
- Are his eyes normal, sunken, or very dry and very shrunken ?
- Is his mouth wet, dry or very dry ?
- Is his breathing normal, faster than normal, or very fast and deep ?

FEEL for the following :

- When the skin is pinched, does it go back quickly, slowly or very slowly(longer than 2 seconds) ? In a baby with diarrhoea, one should pinch the belly, or the back of the neck or the hand. It may be noted that pinching the skin may give misleading information in severely undernourished or obese patients. In the severely undernourished patient, the skin may go back slowly even if the patient is not dehydrated. In the obese patient, the skin may go back quickly even if the patient is dehydrated.
- Can the pulse be felt ? If so, is it normal, faster, very fast, weak or not felt ?
- Is the fontanelle normal, sunken or very sunken ? It may be noted that it is a helpful sign only in children whose fontanelle is not yet closed usually in children under 12 months old.

TAKE temperature :

- Does the child have fever (axillary more than 38.5^{0}C/101^{0}F) ?

Treatment

Once the assessment of degree of dehydration is performed, the appropriate treatment has to be selected. For **no** signs of dehydration, select treatment **Plan A** "to prevent dehydration by advising home available fluids (HAF)". For **some** dehydration,

select the treatment **Plan B** "treatment of dehydration with ORS solution" for **severe** dehydration, the child should be "treated quickly by I.V. and/or ORS solution" (Treatment **Plan C**).

Treatment of a child with *no* signs of dehydration

Treatment ***Plan A:***This aims to prevent dehydration in early diarrhoea. If the children are treated by plenty of fluids from the very beginning of watery diarrhoea, dehydration can be prevented in most of the cases. The fluids available at home and traditionally acceptable are suited best in such cases. The traditional fluids vary from place to place. Any such fluid which contains salt and sugar should be promoted. Perferably the fluids should have an appeal as therapy and be tasty. The advise should emphasise on the type of fluid to be given, its amount and frequency, apart from other advice (e.g. food to be given). Mother or other family members, when advised properly, can manage most of the diarrhoeal children at home, provided those cases do not have any dehydration. Following rules for home treatment of diarrhoea have to be advised :.

(a) Give the child more fluids than usual. If the child is breastfed, try to give breast milk more often. If the child is not breastfed, increase the amount of normal milk feed and dilute the feed with an equal volume of water. Give the child home available fluid or liquids, such as rice water, sarbat/sikanji, lassi etc. Children under 2 years of age should receive approximately 50-100 ml of fluid after each loose stool, and older children should receive twice this amount. Adults should take as much as they want to drink.

(b) Continue feeding the child. Starving a child who has diarrhoea, can cause undernutrition or make it further worse. All children 4 months old or older who have been weaned, should be offered solid food during diarrhoea. The best foods to give are those which are easily digested (such as boiled rice, pulses, beans, sweet potato, green papaya and eggs, fish, well cooked meat) and those containing potassium such as pineapple, bananas and coconut water. Some fat or oil may also be given. Fibrous and spicy foods should be avoided. Even during the process of diarrhoea, most of the nutrients from food continue to be absorbed. A child should be allowed to eat as much as he wants. Foods should be offered often (5 to 7 times a day) during diarrhoea, because the child is not likely to eat much at a time. The child should have at least one extra feed a day for a week after the diarrhoea has stopped.

(c) Watch for the signs of dehydration. Symptoms and signs of dehydration have already been discussed. If a child develops any sign of dehydration or if his diarrhoea lasts another 2 days, the mother should take the child to the health centre or community health worker. However, the points a mother should remember to identify dehydration are (i) thirst, (ii) dark and scanty urine, (iii) sunken eyes and fontanelle and (iv) dry mouth and tongue.

Important

DIARRHOEA CAN BE PREVENTED IF : THE MOTHER GIVES HER CHILD FRESH, CLEAN AND WELL-COOKED FOOD AND CLEAN DRINKING WATER AND THE MOTHER WASHES HER HANDS WITH SOAP AFTER PASSING STOOLS AND BEFORE PREPARING FOOD OR FEEDING THE CHILD SIMILARLY THE HANDS OF OLDER CHILDREN SHOULD ALSO BE WASHED.

Treatment of a child with *mild to moderate* dehydration*

**Treatment Plan B* :When a child develops signs of some dehydration with or without early home management, treatment by ORS must be introduced. It is important to remember that no attempt should be made to manage dehydrated cases by any home made formula or any oral fluid other than ORS of WHO formula. That is why all mothers who are advised for early home management for diarrhoea, must be told to report to the health worker/medical officer, whenever any early sign/symptom of dehydration appears.

Treatment of children with signs of mild to moderate dehydration will involve using a solution made with oral rehydration salts (ORS).

Ingredients of ORS packet (W.H.O. Formula) - (For 1000 ml.)

Content	Amounts in g.
Glucose	20.0
Sodium chloride (ordinary salt)	3.5
Sodium bicarbonate (baking soda)	2.5
Potassium chloride	1.5

Storage of ORS packets :— The guidelines for storing ORS are as following:

- Excessive atmospheric temperature and humidity might spoil the ORS, if stored under such conditions for a longer time.
- Storage areas should be free from insects, rats and mice. Racks away from walls and floor should be preferred.
- Packets should be arranged so that sharp objects will not make holes in the packets.
- Packets of ORS should be arranged, in such a way that identification marks and labels can be easily visible. Thus the older ORS packets (identified by date) may be used first.

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* for practical purposes, mild and moderate dehydration have been jointly referred as some dehydration.

- If the storage facilities are not good it may be necessary to stock fewer packets at a time, to be replenished at regular intervals.

ORS Requirement

Based on data given earlier, a rough estimate of ORS requirement for under-five children under one Village Health Worker covering a population of 1000 in one village is :—

- There will be about 150 children (∠ 5 yr children 15% of the population).
- 150 children will possibly suffer from 300-450 episodes in one year (2-3 episodes/child/year).
- If 10 percent of all such cases develop dehydration 30-45 episodes of diarrhoea will require ORS therapy, at the rate of 2 packets/episode.
- 30 percent (for wastes, older patients, epidemics etc.).

How to prepare oral Rehydration Solution :

- Wash hands
- Measure 1 litre of clean drinking water using a measuring container.
- Pour all the powder from one packet into the water and mix well until powder is completely dissolved.

Fresh ORS should be mixed each day in clean container. The container should be kept covered. Any solution remaining from the previous day should be thrown away.

Treatment of Dehydration with ORS solution

How much ORS solution to give during first 4-6 hours ?

- For a child aged upto 6 months : 200 to 400 ml. or 2 to 5 teaspoonfuls every 15 minutes.
- For a child aged between 7-12 months : 400 to 600 ml or 6 to 8 teaspoonfuls every 15 minutes.
- For a child aged between 1 to 5 years : 600 to 800 ml. or 6 to 8 teaspoonfuls every 15 minutes.
- For older children and adults 1 to 4 litres or 10 teaspoonfuls every 15 minutes.

If the patient desires more ORS solution, provide more. If the eyelids become puffy, stop ORS and continue to give plain water and other fluids. Use ORS solution again when puffiness is gone and dehydration recurs.

If the mother can remain at the Health Centre :

- tell her how much ORS solution to be given to the child
- show her how to give it
- Watch her giving ORS.

After 4-6 hours reassess the child. Then choose the suitable treatment plan.

For children under 12 months continuing the above treatment plan after 4 to 6 hours, the mother should be asked to continue breast feeding between drinks of the ORS solution or 100 to 200 ml of clean water before continuing ORS if the child is not breastfed at all.

If a child begins to vomit while being given ORS solution, wait for 10 minutes then continue ORS slowly in small amounts. If the mother whose child is being treated at OPD or Subcentre must leave any time before completing the treatment, give her enough of prepared ORS soloution for 24 hours and if the child still has dehydration, she should bring the child again.

Treatment of a child with *severe* dehydration

Treatment **plan C** deals with treatment of **severe dehydration.** Community based health staff should be advised not to attempt I.V. treatment in these cases. They should, however, start immediate treatment with ORS as per Treatment Plan B and at once refer the case to the nearby facility for I.V. treatment.

Intravenous (IV) therapy for Severe Dehydration.

Technique of administration

The technique of administration of intravenous fluid (IVF) can be taught by practical demonstration by someone with experience. Intravenous therapy should be given only by trained person. Several general points are made here.

The needles, tubing, bottles and fluid used for intravenous therapy must be STERILE.

Intravenous therapy can be given into any convenient vein. The most accessible veins are generally those in front of the elbow, on the back of the hand, at the ankle, or in infants, on the side of the scalp. Use of neck veins or incision to locate a vein are usually not necessary and should be avoided if possible. In cases requiring rapid resuscitation, a needle may be introduced into the femoral vein where it must be held firmly in place and removed as soon as possible. In some cases of severe dehydration, particularly in adults, infusion into two veins may be necessary; one infusion can be removed once rehydration is well in progress.

It is useful to mark intravenous fluid bottles at various levels with the times at which the fluid should have fallen to those levels. This allows easier monitoring of the rate of administration. A number of solutions are available for I.V. infusion; however, some do not contain appropriate or adequate amounts of the electrolytes required to correct the deficits found in dehydration associated with acute diarrhoea. Ringer's lactate solution is the best commercially available solution. It supplies adequate concentration of sodium and potassium, and the lactate yields bicarbonate for correction of the acidosis. It can be used in all age groups for dehydration due to acute diarrhoea of all causes. Less preferred solutions include normal saline and the half normal saline in 5 percent dextrose solution. Unsuitable solutions are plain glucose and dextrose solutions.

Providing I.V. Therapy for severe dehydration are given in the following table:

This enables the patient to get enough fluid quickly to replace the very large fluid loss which has resulted in severe dehydration.

- Begin intravenous therapy quickly in the amount specified on the table given below :

Guidelines for I.V. therapy for severe dehydration are given in the following table :

Age group	Fluid	Amount of fluid (per kg body wt) ml/kg	Time of administration
Infants(under 12 months)	IV Ringer's lactate	30	Within 1 hour
	Followed by		
	IV Ringer's lactate	40	Within next 2 hours
	Followed by (If appropriate)		
	ORS Solution	40	in next 3 hours
Other children & adults	IV Ringer' lactate	100	in 4 hours, quickly till the radial pulse is felt

The volumes of fluid and rates of administering treatment are averages based on usual needs. These amounts should be increased if they are not adequate to achieve rehydration, or decreased if hydration is achieved earlier than expected or if the appearance of puffiness around the eyes suggests overhydration. Once the doctor has gained sufficient experience in rehydration therapy he need not follow the schedule as described in the foregoing.

For an infant, the entire 6 hour course of therapy should be followed, to quickly restore the fluid loss of the severely dehydrated patient. During that 6 hour period, the progress of the rehydration therapy should be assessed after one hour and every 1-2 hours to determine if the volume or rate of administration needs to be further increased.

In particular, attention should be focussed on :

- the number and volume of stools passed
- the extent of vomiting
- the presence of and changes in the signs of dehydration
- whether the rehydration fluid (oral or IV) is being successfully given and in adequate amounts.

If the signs of dehydration and the diarrhoea and vomiting have become worse or remain unchanged, the rate of administration and the amount of fluid given may need to be increased.

While rehydration therapy is in progress, the patient's normal daily fluid requirements must also be considered. After 6 hours, begin breastfeeding, or for the non-breastfed infant, give 100 to 200 ml of clean water before continuing oral rehydration therapy.

After the first 6 hours (4 hours for older children and adults), ASK, LOOK and FEEL for the signs of dehydration. At this point, complete or near complete rehydration of the severely dehydrated patient should have been achieved. The patient will require continued therapy to prevent dehydration from returning as long as the diarrhoea continues.

Drugs used in Treatment of Specific Cases of Acute Diarrhoea

Sometimes children with diarrhoea may present with problems other than dehydration like chronic diarrhoea, dysentery (blood and mucus in the stools), temperature or undernutrition. Apart from ORT, they should be treated according to the nature of the problems with the appropriate antimicrobial drugs as outlined in the Table 1.

Table 1: Drug used in Treatment of Specific Cases of Acute Diarrhoea

Cause	Drug(s) of choice[1]	Alternative[1]
Severe Cholera[2,3]	**Tetracycline** *Children (over 8 years)*- 50mg/kg/day in 4 divided doses x 2 days Adults-500 mg 4 times a day x 3 days	**Furazolidone** *Children*-5 mg/kg/day in 4 divided doses x 3 days *Adults*-100 mg 4 times a day x 3 days **Trimethoprim (TMP) Sulfamethoxazole (SMX)** *All ages*-TMP 8 mg/kg/day and SMX 40 mg/kg/day in 2 divided doses x 3 days
Shigella dysentery[2,4]	**Trimethoprim-(TMP) Sulfamethoxazole (SMX)** *Children*-TMP 10 mg/kg/day and SMX 50 mg/kg/day in 2 divided doses x 5 days *Adults*-TMP 160 mg and SMX 800 mg twice daily x 5 days OR **Nalidixic Acid-** (should be reserved for severe cases and cases not responding to other drugs) *Children*-55 mg/kg/day in in 4 divided doses x 5 days *Adults*-1 gm 3 times a day x 5 days	**Furazolidone** *Children*-5 mg/kg/day in 4 divided doses & 5 days Adults-100 mg 4 times daly x 5 days **Ampicillin**-100 mg/kg/day in 4 divided doses x 5 days
Acute Intestinal amoebiasis[5]	**Metronidazole**[6] *Children*-30 mg/kg/day x 5-10 days *Adults*-800 mg 3 times a day x 5-10 days	**Tinidazole -** *Children*-.5-1 gm daily x 2-3 days 50 mg/kg) *Adults*- 2 gm daily x 3 days
Acute giardiasis[6]	**Metronidazole** *Children*-15 mg/kg/ day x 5 days *Adults*-200 mg 3 times a day x 5 days	**Tinidazole -** *Children*- .5-1 gm single dose (50 mg/kg) *Adults*- 2 gm single dose

1 All doses given are for oral administration unless otherwise indicated. If drugs are not available in liquid form for use in young children, it may be necessary to approximate the doses given in this table.

2 Selection of antibiotic for treatment should take into account frequency of resistance to antibiotics in the area.

3 Antibiotic therapy not essential for successful therapy but shortens duration of illness and excretion of organisms in severe cases.

4 Antibiotic therapy especially required in infants with high fever or severe undernutrition.

5 Requires microscopic examination of stool for diagnosis.

6 Trinidazole and ornidazole can also be used.

Health workers in the community and in health facility should keep a record of each patient who comes for a service or treatment. Each child must be identified in the records by their name, age, date of visit, diagnosis, type of treatment or service provided and result. This information is needed because one should be able to determine each month the number of episodes of diarrhoea treated in children less than 5 years old. Additional data which may be recorded include - sex, address, whether referred to PHC or a hospital etc. Review of these records may be done periodically when monitoring actual use of various services and planning future use.

Implementation of the oral rehydration therapy (ORT) programme for management of diarrhoea cases at the Block/Community level.

The knowledge and skill gained in the course will enable the trainee to treat any child with diarrhoea attending PHC. As a medical officer in a block/health unit, the medical officer is responsible for overall management of all diarrhoeal children in the community. To ensure such provision of treatment to all the diarrhoeal children, it is essential to implement a proper treatment strategy in the health area/block towards effective implementation of ORT programme. Following three tier approach has been suggested :

Tier	Child's Condition	Who will treat	By what	Where
I	No dehydration	Mother	HAF	Home
II	Some dehydration	MPW, CHG, AWW	ORS	Home/Centre
III	Severe dehydration	MO	I.V+ORS	PHC/Hospital

In the 3-tier approach, mothers will be educated to start "Home Available Fluids" as soon as diarrhoea starts. At this stage, if a mother brings the child to a health worker, he will examine the child and if there is no dehydration, the mother will be advised "HAF". She will also be asked to report for ORS if dehydration develops. Such advice might be risky unless FREE village based service to provide ORS treatment is ensured for cases who develop dehydration. Treatment by ORS can be done at subcentre or home by a village based worker who may be a multipurpose worker, CHG, AWW or any other voluntary worker, provided they are trained properly, supervised and supplied with ORS. All children who develop severe dehydration with or without any early treatment will be admitted in PHC and treated by the Medical Officer only.

Supply of ORS packets

Without supply of adequate number of ORS packets at proper intervals, the whole programme is bound to fail. Further, the effect of training and education will wither away if those trainings are not utilised and practised due to lack of ORS supply.

For supply of ORS packets :

- Calculate the demand for whole block for one year
- What are the distribution channels for the blocks ?
- Who are the staff under the control of the medical officers who can be entrusted with regular distribution of ORS from the Primary Health Centre ?
- What is the lag time between supply of ORS from the Headquarter and placing the demand in the area ?
- At what intervals the demand for ORS should be placed at the Headquarter ?

- What will be the intervals for ORS distribution to MPW/HA ?
- How does one instruct the health worker to store ORS in the subcentre ?

Based on the answers to each of the questions above, the supply of ORS is made.

Education for mother and community

Like any learner, mothers will learn better from their own experiences. So village level workers must be trained well as to how to communicate to mothers whenever a patient is brought to them for treatment of diarrhoea. Such inter-personal communication is perhaps the best method of education and must be carried out even when the child is not suffering from diarrhoea. For example, it can even be done when the child has been brought for immunisation or during home visit of health workers for other purposes. Apart from these efforts, small group meetings, should also be conducted in each village by the MPWs under the supervision of the Health Assistant.

The National diarrhoeal Disease Control Programme should be linked to the following programmes :

- Safe Drinking Water Suppply (Chapter .. 4)
- Food Hygiene (Chapter .. 5)
- Environmental Hygiene (Chapter .. 5)
- U.I.P. (Chapter .. 8)
- I.C.D.S. (Chapter .. 10)

Monitoring :

The objective of monitoring is to keep an eye on how the activities are going on. Any problem will thus be brought out and tackled immediately. For this, major activities at each level with check list for monitoring are as given below :

- Treatment of cases at PHC
- Training of paramedical functionaries
- Maintaining supply of ORS.
- Keeping of records for cases, training, educational campaigns held and ORS supply.

Monitoring checklist at PHC level :

a) For treatment of cases, ensure the treatment of moderately and severely dehydrated cases, check the stock of IV Ringer lactate solution and ORS packets, check the records being maintained and check the number of cases of some dehydration and severe dehydration treated.

b) For training, check whether an overall plan exists to implement the training programme upto the village level; check the number of workers at each category trained as planned and observe whether the method of training is being correctly followed.

c) For ORS supply check that the stock register is being maintained properly and check that orders are being placed at proper intervals.

d) For records, check the quality of records, find out the villages where from the cases of 'no dehydration', 'some dehydration' are coming to PHC without treatment at village levels and find out the number of cases treated by ORS, referred and deaths.

By supervising the jobs of the workers the team leader can support them in discharging their duties in an efficient way. The workers need supervision in their activities like training, educating the mother, supply of ORS and treatment of cases. Supervision should be carried out intensively during initial phase of implementation of the programme when workers will require much guidance for acquiring the skills properly. Since the skills deteriorate with passage of time, time to time supervision of the jobs should also be carried out. A few examples have been given below :

a) For training, supervise while a worker plans out a schedule of training programme and makes arrangements for a training session. Supervise during the training session to check if the content and quality of training are proper.

b) For education of mother, supervise the educational campaigns like the group meetings in a village. Check if the dates of meetings are not repeatedly changed; the village opinion majority leaders are intimated in time; that majority can listen to the worker and the messages are clearly expressed in a meeting and that the questions for mothers are encouraged and they are replied convincingly.

c) For supply of ORS, supervision is needed of the worker who is entrusted with the job of arranging the ORS supply. It should be checked that the quantities required are correctly calculated and the demands placed and received from the headquarter in time.

d) For treatment of cases, the workers will need supervision at the time of treating a case.

List of Activities of Medical Officers for ORT Programme :

a. Management of cases at PHC :

Treatment of all cases of diarrhoea in OPD

Motivate mothers to get treatment from local health worker /MPW.

Treat referred/admitted cases.

Maintain record of all diarrhoea cases in respective OPD registers and treatment charts.

Implement village based ORT programme for all underfive diarrhoea cases in the area, which will be achieved by training paramedical workers, ensuring supply of ORS and monitoring and supervision of their work.

b. *Training of paramedical functionaries in the block*

List total number of functionaries of different categories.

Decide who will train, at what level.

Conduct the training programme for Health Assistant which provides appropriate skills for management of cases as well as training of MPWs.

Implement training programme for MPWs with the help of HA, which provides appropriate skills for management of cases as well as health education of the mothers in the community.

c. *Education of mothers in the community :*

Ensure skill among HAs and MPWs about contents and methodology for education to mothers.

Supervise and monitor educational campaigns through monthly reports, spot checking, field visit, meetings with workers.

d. *To ensure supply of ORS*

Calculate requirements of ORS packets for the block.

Decide the role of each category of personnel, in the treatment of diarrhoea with ORS.

Calculate requirement of ORS for each worker/health unit.

Decide time interval at which ORS is to be supplied.

Maintain records for supply, distribution, utilisation of ORS.

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Decide time interval at which ORS is to be supplied.

Maintain records for suply, distribution, utilisation of ORS.

e. To monitor the programme

Maintain records for OPD and indoor patients

Maintain records for ORS

Analyse records submitted by MPW and complied by HA to determine the number of diarrhoea cases under treatment by the health workers, number of ORS packets used, number of beneficiaries received ORS. number of training programme, number and tyupe of educational campaigns carried out, number of diarrhoea-associated deaths and number of cases attending OPD with types of dehydration.

CHAPTER 7

ACUTE RESPIRATORY INFECTIONS

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ACUTE RESPIRATORY INFECTIONS

Introduction

Acute respiratory infections (ARI) constitute a group of clinical diseases caused by a variety of pathogens including bacteria and viruses. The group includes influenza, sinusitis, acute otitis media, nasopharyngitis, tonsilitis, epiglottitis, laryngitis, tracheitis, acute bronchitis, bronchoilitis and pneumonia. Some of the respiratory infections like measles, diphtheria, whooping cough and childhood tuberculosis are preventable with the immunization as included in the EPI/UIP.

In the developing world, nearly 20 per cent of the children die before their fifth birth day and up to one third of these deaths are associated with ARI. Of the fifteen million child deaths in the world annually, ARI alone accounts for around four million. In India around 7,50,000 children below five years of age die of ARI every year i.e., 2000 deaths/day or 85 deaths/hour. The risk of an Indian child dying of ARI is 30-75 times more than that of his counterpart in the developed world.

In India, ARI accounts for 14.3 per cent of deaths during infancy, 15.9 per cent of deaths during 1-5 years. In the paediatric age group, 20-24 per cent of deaths are attributable to ARI.

A child suffers 5-8 episodes/year in urban and 2-3 episodes/ year in rural areas,. ARI comprises 25-30 per cent of hospital consultations and 25 per cent of the total hospital admissions.

Mode of Transmission

The commonest mode of transmission is by person to person through respiratory and nasopharyngeal secretions. Spread due to direct hand contact and thereby self inoculation of nose or eyes has also been demonstrated. Lab diagnosis poses a problem. In 50 per cent of the cases no pathological agent is detected. Paradoxically, a vast majority of healthy children carry pneumonia.

Risk factors

Biological Factors:

Low birth weight (LBW) : The infants born with low birth weights, once infected, are more prone to death from pneumonia. In England mortality in children with LBW was

6.4/1000 live births as compared to 6.8/1000 in children with birth weight more than 2500 g.

Malnutrition and ARI relationship : The average duration of ARI illness in a malnourished child is significantly longer. The complications are more frequent and prognosis graver; for instance, pneumonia may be twenty times more frequent in malnourished children as compared to normal children.

Lack of immunization : Pneumonia is a common complication associated with measles and whooping cough. It can be prevented with successful immunization programme.

Vit. 'A' deficiency : Vit. 'A' is getting established as an anti-infective vitamin. Its role in prevention of ARI may be quite significant .

Antecedent viral infection : These act by impairing the child's immune status. The bronchial epithelium is damaged and thus the clearing of bacterial agent is impaired.

Environmental factors

Air pollution : Air pollution - both indoor and outdoor, is directly associated with an increased incidence of ARI. The inhalants in polluted air cause damage to tracheobronchial mucosa and bring about ciliary paralysis which might increase susceptibility to severe infection.

Passive smoking : Passive smoking predisposes a child to respiratory illness. The passive exposure to smoke in childhood has an important bearing on the development of respiratory function, which in turn, may predispose a child to increased risk from environmental agents later on in life.

Pollution from biomass fuels : Heavy exposure to smoke from cooking and heating fires predisposes a child to severe ARI.

Social Factors

Over-crowding : In conditions of continued close contact in crowded families, a higher secondary attack rate for respiratiory infections has been established.

Breast feeding : Breast feeding protects against severe respiratory infections. humoral antibodies and other host resistance factors present in human milk play a crucial role against both viral and bacterial agents.

Time Factor in Prognosis of ARI

Respiratory infections, if treated early and effectively, can be completely cured in nearly all cases with normal life expectancy, which is often not possible with other system diseases. There is empirical evidence that the high mortality in acute infection, including

those affecting the respiratory system is mainly attributable to gross delay in institution of effective therapy.

National ARI Control Programme

It has the following aims :

- To reduce the number of cases needing hospital admission.
- To avoid the delay to cases that need in-patient treatment.

The strategies for achieving the objectives of ARI Control are as follows:

- Standard case management
- Health education
- Preventive measures including immunization

Standard case management

The community health worker is the sheet anchor of ARI control programme. She has the twin responsibility - detection as well as prevention of cases. She must be trained to detect ARI (mild, moderate or severe). This commuunity level diagnosis will not be based upon etiological or anatomical definition of ARI but on management-oriented criteria using simple clinical manifestations. These manifestations include

- rapid breathing (rate > 50 / minute)
- chest in-drawing; and
- inability to drink.

Mild ARI patient has cough without rapid breathing, chest in drawing or inability to drink. Supportive measures at house is all that is necesssary. Nutritious food and plenty of fluids should be given. The air passages should be kept clear. The antipyretics should be given whenever necessary.

Moderate ARI child has cough with rapid breathing but no chest in-drawing or inability to drink. In this case the child requires anti-microbial therapy in the form of co-trimoxazole (Trimethoprim 4 mg/kg, 12 hourly for 5 days) and supportive measures at home as mentioned earlier.

Severe ARI child has cough with chest in drawing or cough with inability to drink. Immediate referral to a hospital or a health centre is recommended.

Further, the health worker can do surveillance of severely malnourished children who run a high-risk of ARI, of children with measles or recovered from it, premature

infants, neonates and children with wheeze.

Preventive Measures

These preventive measures include reduction in malnutrition, promotion of breast-feeding, improvement in birth weight, reduction in indoor smoke exposure and strengthening of immunization services and coverage. The ARI which can be prevented by immunization include measles, diphtheria and whooping cough. These have been covered under the Expanded Programme on Immunisation. Under the Universal Immunisation Programme. It is envisaged to have 85 per cent coverage against these diseases by 1990 AD.

Health Education

Health Education constitutes the most important component of the programme. This aims to create an awareness in the community regarding the severity of ARI so that mothers understand the appropriate management decisions. The health education measures will stress on the following topics, for example.

- Most children with cough *do not* need antibiotics.
- Children with cough and difficult breathing,do need treatment from a health worker quickly.
- Fast breathing and chest indrawing are signs of severe ARI and may require hospitalization.
- Breast feeding should be promoted.
- A child with cough should be given food and drink.
- A child with cough should be kept **warm** and not **overwrapped.**
- Immunizing children can prevent some serious kinds of cough.
- Passive smoking and domestic air pollution should be reduced.

The campaign is expected to lead to recognition of mild, moderate and severe ARI by mothers, immunization of children at right age, maintenance of nutrition and early institution of appropriate antibiotic therapy in moderate and severe ARI cases. These activities are likely to help in building confidence of the people for existing primary health care services, ensure their participation and motivate them to demand the services. For this, suitable health education aids and related materials relevant to the local culture and acceptability will have to be developed and disseminated to the community. Some health education material is already available. All possible mass media such as films, radio and television will be explored to bring the message to the remotest corners of the country.

Programme Implementation and Coordination

As an integrated programme, the efforts for ARI control are proposed to be an integral part of the primary health care activities. Therefore, no new infrastructure or manpower will be necessary. The programme can be safely integrated with the diarrhoeal diseases control, immunization and other MCH activities. With minimum additional input, PHC workers can be trained who will then have capabilities of tackling the most important cause of childhood mortality.

The national ARI programme is proposed to be implemented in a phased manner. Initially a few districts are to be selected for implementation and then the activities expanded in such a manner that in the ensuing five years all the districts in the country will be covered under the programme.

Major input in the programme will be in the form of drugs especially the antimicrobials, in order to treat all the moderate and severe ARI cases, an estimated 45 million of such cases annually. This observation is based on 100 million children under 5 having 3 episodes per year, hence the total ARI episodes being 300 million. Of these, 15 per cent would be of moderate or severe nature requiring antibiotics, which amounts to 45 million cases nation-wide and approximately 0.1 million per district. With cost of Rs. 4.0 for treating each of these with co-trimoxazole, the cost per district would be Rs. 0.4 million. When implemented nation-wide, the approximate annual cost on antimicrobials would be Rs. 180 million. With this, the programme will ensure continuous supply of drugs — a drug chain, so that life-saving antimicrobials remain available in the health centres and with PHC workers at all times. Due to the extent of ARI morbidity, the amount of antimicrobials required may appear enormous and also the likelihood of drug use more than what is going on at present. It is worth noting, however, that under the programme, prescription of antimicrobials is proposed to be rationalised based on an objective criteria and by providing them only for moderate or severe ARI cases thereby avoiding the current practice of indiscriminate use of these drugs. The programme may thus reduce the expenditure rather than increasing it.

To promote, coordinate, implement, monitor and evaluate the ARI programme, a unit needs to be created in the centre. In the states, ARI activities may initially be assigned to an officer currently responsible for CDD or EPI/UIP but later on, a full fledged unit to look after ARI activities may be required.

Training is crucial for the implementation of a national programme. This would be essential for creating an awareness among various levels of health professionals regarding the importance of ARI as a public health problem and regarding the feasibility of mortality reduction through standard case management technique. Such a training may be given in the integrated training along with the training for other national health programmes for women and child to save time and resources and thereby ensure a co-ordinated package at the field level.

Inter-sectoral co-operation will be essential in the implementation of ARI programme. Apart from the collaboration at the central level between the CDD, EPI, MCH sections, co-operation between different departments at the peripheral levels will be needed. Voluntary agencies including *mahila mandals* (ladies clubs) and youth clubs will be required to be mobilised for ARI control activities. ICDS system has to play an important function at all the levels of implementation.

The programme will need to be evaluated periodically to assess whether it produces measurable impact on mortality from respiratory illness. For this purpose, clinical, laboratory and epidemiological data will be collected through rapid surveys which are simple and inexpensive and through establishment of a network of sentinel centres. In additon, the performance of health workers at all levels will be monitored and antimicrobial usage rate especially in the primary care level will also be quantified. Evaluation of ARI programme can be done together with other programmes as mentioned in the forgoing, such as CDD and EPI.

CHAPTER 8

IMMUNIZATION PROGRAMMES IN INDIA

IMMUNIZATION PROGRAMMES IN INDIA

Introduction

Expanded Programme on Immunization (EPI) was launched in1974 with the goal of reducing morbidity and mortality from the target diseases by providing immunization services for all children of the world by the year 1990. In India this programme was however started in 1978. This programme at present is undertaken essentially for six different vaccine- preventable diseases viz., tetanus, diphtheria, pertussis, tuberculosis, poliomyelitis and measles. Although some of the vaccines included in the immunization programmes were available even before the EPI was launched, the coverage was low and the vaccines were given to varying age groups thereby decreasing the effectiveness of the programme. Recognising the primacy of immunization in the package of child survival and development activities, the National Health Policy has set the targets of 85 per cent of the population to be covered by BCG, DPT and polio immunizations, and 100 per cent for TT immunizations to pregnant women by the year 1990. Subsequently measles immunization was included in the package and its target is 85 per cent of the infants. A revised strategy through 'Universal Immunization Programme' (UIP) was launched in 1985 to achieve the targets in a phased and planned manner.

The main features of the revised strategy i.e., UIP are the following:

- Launching of the UIP by the Prime Minister of India in 1985 signifies that this is a national commitment.
- To begin with, just 30 districts were included, to be followed by the inclusion of the remaining districts in a phased manner by the year 1990.
- Shift in the target age group from under 2 years to under 1 year for BCG, DPT and polio immunizations.
- Involvement of medical colleges, the students and interns to provide services in the communities allocated to the medical colleges as their field practice areas.
- Additional inputs in terms of syringes, needles, vaccine carriers, thermoflasks, ice-lined refrigerators, walk-in coolers at district level.

- Introduction of immunization against measles as part of the immunization schedule.
- Another significant development in the recent months has been the shift in the age for starting the DPT and polio vaccine from 3 months to 6 weeks.
- Large number of medical and paramedical functionaries are being trained to discharge their functions more effectively.

It is envisaged that by the year 1990, we will immunise every year, a total of 18.3 million infants with 3 doses of DPT, 3 doses of polio, BCG and measles vaccines and as many as 23.9 million pregnant women will receive 3 doses of TT vaccine (85 % of the 22 million infant population and 100% of the expected 23 .9 million pregnant women). Such high levels of targets will have to be maintained year after year, if we are to bring down the morbidity and mortality due to these diseases to very low levels. The main thrust of the programme under UIP is the improvement in the logistics and managerial aspects for the optimal utilisation of the available resources and cost effective implementation of the programme.

Objectives of the Universal Immunization Programme

- To reduce mortality and morbidity due to diphtheria, pertussis, tetanus, polio, tuberculosis and measles among children. (The mortality rate in the country for neonatal tetanus is estimated to be 13.3/1000 live births in the rural areas and 3.2 in the urban areas. It is aimed to reduce the neonatal tetanus mortality rates to < 1/1000 live births. From the estimated annual incidence rate of poliomyelitis of 1.5 -1.7/1000 children in the age group of 0 - 4 years in urban areas and 1.6-1.8/1000 in rural areas, it is aimed to bring down the incidence of poliomyelitis to negligible levels by the end of 1990.)
- To improve the quality of information by augmented routine reporting, baseline surveys for neonatal tetanus and polio, an organised surveillance mechanism at all levels and improved disease identification methodologies.
- Training and orientation of the health professionals at all levels.
- Universal immunization of infants and pregnant women
- Self sufficiency in the production of vaccines in the country.
- The immunization programme has been accorded very high priority by the Government of India and it is one of the Technology Missions monitored directly at the PMs Secretariat level.

Target Diseases included in the Universal Immunization Programme.

Tuberculosis

Tuberculosis is a major public health problem of our country with a high morbidity and mortality. Nearly 1.8 per cent population above 5 years is suffering from radiologi-

cally active tuberculosis of the lungs of which 25 per cent are sputum positive or infectious. Further, 2.8 per cent of the children below 5 years are infected with tubercle bacilli. The annual incidence or attack rate of infection in the 0 to 4 years age group is 0.8 per cent. The disease is suspected in case of low grade fever for a number of days. The child is listless and there may be loss of weight. Tuberculosis can affect any part of the body, with TB meningitis being a dangerous variety. Antimicrobial therapy generally reduces the communicability within a few weeks. Inoculation of susceptible infants with BCG vaccine does not lead to a progressive disease and provides resistance to subsequent infection by the virulent tubercle bacilli.

Diphtheria

The annual reported incidence of diphtheria is between 25,000 and 35,000. A child with fever and sore throat should be checked for diphtheria caused by the bacteria *Corynebacterium diphtheriae*. Within four to six days after the symptoms appear, the child may have fever with a markedly swollen throat and a greyish membrane. The child has difficulty in breathing. The toxins liberated by the bacteria can affect the heart muscles and the nerves. The patient is capable of transmitting the disease to other individuals throughout the course of the disease by droplet infection.

Pertussis

As many as 30,000 cases of pertussis are reported annually. It is estimated that 80 per cent of the children in an unimmunized population will contract the disease and 1.5 per cent of them can die of the disease or from its complications. Pertussis or whooping cough is an acute respiratory infection which is highly contagious in the early stages. The disease is characterised by severe coughing bouts. The cough may last several weeks. The disease can secondarily lead to malnutrition and complications, resulting in considerable morbidity and mortality. The child vomits after severe bouts of coughing. The symptoms appear 5 to 8 days after contact with another patient. Infectivity is extremely high in the early stages of the disease and the infection spreads through small droplets in the air. Adequate protection is offered by giving three doses of the vaccine at monthly intervals.

Tetanus

Tetanus is a major cause of neonatal mortality in the country. The symptoms of the disease manifest after 3 to 4 days of birth and then death follows rapidily. The case fatality rate is very high being nearly 75 per cent even in the best of the centres in the country. Tetanus can also occur in older children and adults. The spores of the bacteria *Clostridium tetani* enter the body when broken skin (through cuts, wounds or burns) is contaminated with dust, soil or other substances containing the spores. The case fatality rate is very high. It is estimated that at least 50,000 get the disease every year in our country. The disease is prevented by i) immunization of all pregnant women with 2 doses of TT at an interval of at least 4 weeks; ii) hygienic care at birth and by the use of a sterile blade for cutting cord; and iii) post - natal care (by avoiding unclean dressings in the umbilical stump).

Poliomyelitis

Poliomyelitis being the leading cause of lameness in children, is a serious public health problem. The source of infection are patients and children with inapparent forms of the diseases. Sample studies have revealed that up to 200,000 children are affected by the disease in our country every year. Majority of the cases were under two years of age at the time of infection, the peak being around 18 months of age.

The disease presents in young children as fever with pain or weakness of the muscles in the legs or arms. Paralysis of one or more limbs may follow soon. Severity of the disease can vary. Poliomyelitis, caused by the polio viruses of types I, II and III can be transmitted by the viruses excreted with faeces and spread through contaminated food, water and articles of daily use apart from droplets in the air. Affected patients are infectious from 7 to 10 days before to 7 to 10 days after the onset of symptoms. Adequate protection is provided by giving 3 doses of oral polio vaccine starting from 6 weeks of age given at monthly intervals. Booster doses are given in the 2nd year of life.

Measles

Fever with catarrh and watering of the eyes followed by rash on the third or fourth day starting from the face and spreading downwards may be due to measles. The symptoms appear about 9 to 10 days after close contact with a patient. There is fever, conjuctivitis, running nose, bronchitis and small white spots (Koplik's spots) in the inner surface of the cheeks. The disease is caused by the measles virus. Infectivity is from a few days before to two weeks after the appearance of the rash. Infection spreads by droplets in air. Measles is a highly infectious disease and virtually all children will contact it at some time or other unless protected by vaccination. Around 100,000 cases are reported every year. Measles can lead to secondary infections of the lungs, ears and eyes. The complications can be severe in a malnourished child and can prove fatal in those where early diagnosis and treatment is difficult due to poor health facilities. It is projected that case fatality rate of measles ranges from 1 to 3 per cent. Complete protection is possible by immunization with measles vaccine at the 9th month of life.

National Immunization Schedule

Beneficiaries	Age	Vaccine	No. of doses	Route
Infants	Birth to 9 months	BCG	1	Intra-dermal
	6 weeks to 9 months	DPT	3	Intra-muscular
		Polio	3	Oral
	9 to 12 months	Measles	1	Sub-cutaneous
Child	16 to 24 months	DPT	1 booster	Intra-muscular
		Polio	1 booster	Oral
Women	Pregnancy 16-36weeks	TT	2	Intra-muscular

For institutional deliveries, BCG and OPV be given at birth.

Give one dose if previously given, complete schedule of TT.

Note

1. Interval between 2 doses should not be less than one month.
2. Minor coughs, colds and mild fever are not a contra-indication to vaccination.
3. During diarrhoea also, all the vaccines can be administered to the child, However, the dose of OPV given during diarrhoea is not to be counted.
4. If a child returns for the next dose much after one month the whole course need not be repeated. Administer the due dose and continue with the rest as per the schedule.
5. All the EPI vaccines can be administered together. However, BCG and measles are to be administered in different arms.
6. Older children should be given vaccines "on demand"
7. The dose of all vaccines is 0.5 ml except BCG which is 0.1 ml. Two drops of polio vaccine is given orally.

Adverse reactions and complication of immunization

Reactions after vaccination are in general mild and of a short duration. These may be; (i) mild fever; (ii) local pain and swelling at the site of injection; (iii) mild rash one week after measles vaccination; and (iv) a lump or papule appearing in the third or fourth week after BCG vaccination. It is generally not painful but is tender to touch. The papule increases in size 6 to 10 mm in diameter by the sixth week. The nodule softens with the formation of pus. No treatment is necessary. At the end of 10 to 12 weeks only a small scar is visible.

Rarely convulsions or collapse after DPT vaccination have been observed. In such cases further doses of DPT should be stopped. Instead, one dose of DT may be given (second dose). If 2 doses of DPT have already been administered, further doses are not required.

Abscess formation is usally due to the use of unsterilised or indaequately sterilised syringes and needles. The injections are painful if blunt needles are used.

Contaminated vaccines can lead to severe reactions. Use only sterile syringes, needles to mix vaccines and to draw them from the vials or ampoules (measles and BCG vaccines). Use a single sterile syringe and needle for each injection.

The parents should be informed of the expected side effects so that they do not panic or worry. If there is any anxiety, they should be encouraged to return to the health centre for consultation.

The Action Plan for UIP

To effectively plan for universal immunization coverage of pregnant women and infants in your area, you must have a clear idea of the following :

- Complete enumeration of pregnant women and infants
- Manpower and health facilities available
- Availability of other resources
- Geographical terrain, accessibility of areas in different seasons, and the state of roads and communication facilities; and
- Resources and assistance that can be tapped from other sources.

The following must be clearly defined :

Task Descriptions of all the steps to be performed in order to carry out each major step. Task descriptions describe what must be done.

Job Descriptions which clearly describe the tasks to be performed by the staff members. Job descriptions describe who will do the work.

List of Activities at District Level

- Prepare a plan of action for the district
- Mobilize resources and co-operation of other government departments, voluntary agencies, organised sectors etc.
- Arrange a briefing session with the concerned officers of the PHCs, medical colleges, sentinel centres, other government and voluntary agencies
- Define task and job descriptions and coordinate the work of the various agencies. Plan training activities, for each category of workers.
- Chalk out strategies of implementation of different areas. Draw up a time schedule for outreach operations and campaigns in consultation with the MOs of the PHCs.
- Place an indent with State UIP officer for the required quantities of vaccines indicating periodicity of supply.
- Arrange for the collection of vaccines from the state stores/nearest airport. Keep not more than 3 months' requirements at the district stores if electricity supply is reliable. Distribute not more than one month's requirements to the PHCs after ascertaining the previous balance stock. Maintain records of vaccines received, distributed and in stock.
- Draw up an inventory of the cold storage facilities and indicate further requirements to the state EPI officer.

- Check that all supplies and equipment required are available. Place an indent with the state UIP officer or arrange for procurement if funds are available.
- Make arrangements for the availability of required quantities of ice, kerosene and other supplies as well as for the mobility of the staff.
- Arrange for active surveillance of poliomyelitis and neonatal tetanus. Identify sentinel centres, coordinate their work and arrange for field investigations when necessary.
- Ensure regular monitoring and supervision of work. Send monthy feedback to the state EPI officer.
- Conduct vaccination coverage evaluation surveys annually.

List of Activities at the PHC Level

- Prepare a plan of action for the PHC. Chalk out strategies of implementation for the coverage of the eligible children and pregnant women in the area. Draw up a time schedule for outreach operations and compaigns.
- Mobilise resources and cooperation of other government departments, voluntary organisations, organised sector, community leaders and others.
- Arrange a briefing session with the concerned staff to explain the objectives of the programme and the strategies of implementation. Define job responsibilities. Arrange training programme.
- Place an indent for the required quantities of vaccines with the concerned District Health Officer. Check balance stock before placing orders for fresh supplies. Keep not more than one month's requirements.
- Check that all supplies and equipment required are available. Place an order with the district health officer or procure if funds are available.
- Make arrangements for the availability of required quantities of ice, kerosene and other supplies as well as for the mobility of the staff.
- Arrange for wide publicity to encourage community participation.
- Ensure regular monitoring and supervision of work. Ensure completion of recommended immunization schedule at the right age. Send monthly feedback to the District Health Officer and to the subcentres.
- Organise inter-sectoral coordination meetings periodically to enlist fuller participation and support.
- Participate in the epidemiological evaluation of the programme and annual evaluation of vaccination coverage.

Determination of the Needs and Requirements

Complete enumeration of the eligible infants and pregnant women must be done by worker and this must be updated quarterly. If the workers have complete record of all the eligibles, then only the target of universal immunization can be achieved. Pending enumeration, the strategy can be planned on the basis of estimates which will be done as follows:

Estimation of the eligibles: The objective is to provide universal immunization coverage in the given area. The first step is to have an estimate of the total number of pregnant women and infants. This is done by using the formula

Population x birth rate x (1.05) = No. of pregnant women
Population x birth rate x (1 - IMR) = No. of infants

(Note : 5% pregnancy waste as per Govt. of India instructions)

Example

If the population served by a primary health centre is 30,000, the birth rate is 29/1000 and IMR is 95/1000 live births, the expected number of pregnant women and infants in a year will be :

30,000 x 0.029 x 1.05 = 913 pregnant women, and
30,000 x 0.029 x (1 - 0.095) = 858 infants

Using the above formula, the estimates of pregnant women and infants should be worked out at each level *viz.*, village subcentre area, or the area covered by an ANM/ MPW-F, a primary health centre and so on.

The health workers should have a list of the pregnant women and infants in the areas covered by them. The list should be kept up to-date. The information can easily be obtained during their visits to the villages and also through the village level workers such as dais, VHGs, anganwadi workers (AWWs) and others. The name of the child should be registered soon after birth, the vaccination being given when the child reaches the right age.

If the numbers enumerated do not fall with in 10 per cent of the estimates, it is the responsibility of the medical officers to ensure that the lists are updated immediately.

Estimation of the number of contacts

The number of vaccination sessions to be scheduled depends upon the number of children to be vaccinated in the areas served by the health centre or vaccination site. If there are ten or more children to be vaccinated daily, it is advisable to schedule daily sessions. This will ensure that all children can be vaccinated at the earliest acceptable age

and will therefore provide them the best protection against disease. If there are fewer than ten children to be vaccinated daily, the vaccines and time of the health staff may be wasted by holding daily sessions, so it is better to plan fewer vaccination sessions.

To determine the average number of children, to receive vaccinations per month (monthly target population), divide the number of children to receive vaccinations for the year by 12 and multiply by the number of doses of the vaccine which need to be given.

Each visit to the health centre or vaccination site for vaccination is called "contact". Five contacts are required for one child to receive the complete series of vaccinations, so the total number of contacts will be five times greater than the number of children in the tagret population. Two contacts with each pregnant women are expected.

Estimation of the vaccine needs

Estimation of vaccine requirements and ordering for the right quantitites of vaccines is critical for the success of your programme. The requirements depend on the population to be covered and the number of sessions to be held (periodicity of supply). It must be stressed that every opened vial should be discarded at the end of the session. Unopened vials should be returned to the PHC. The factor 1.33 is applied in case of DPT, polio, DT and TT vaccine requirements as up to 25 per cent wastage is permissible once a vial or ampoule is opened. In the case of measles and BCG vaccines the permissible wastage is 50 per cent and the multiplication factor used is 2. Hence the vaccine requirements will depend on the number of pregnant women and children, the number of sessions held and the wastage factor.

Vaccine requirement: Total no. of infants/pregnant women to be covered x no. of doses of the vaccine x 1.33 (x 2 for measles and BCG vaccines) divided by the no. of sessions proposed to be held.

The vaccines are supplied in 10 or 20 dose vials or ampoules. The required number of doses are divided by 10 or 20 and rounded off to the nearest number of vials or ampoules.

Estimation of cold chain requirements

It is vital that the vaccine reaches the beneficiary in fully potent state. All vaccines must be kept at + 2 to 8°C, otherwise they lose the effectiveness to protect against diseases. The cold chain requirements will depend on the quantitites of vaccines to be stored and the period for which they will be stored.

It is estimated that cold storage facilities for roughly 30,000 to 40,000 vials of all vaccines will be necessary at the district level (3 month's requirements of an average district of 2.5 million population).

Storage capacity of around 900 to 1200 litres is required to store the above quantities of vaccines.

A PHC would roughly be required to keep 400 to 500 vials a month. Such quantities can be easily stored in an ordinary refrigerator. Cold boxes, vaccine carriers and day carriers would be needed to carry vaccines to the lower formations and to the field. The total numbers will depend on the number of the centres, the staff in position and the strategies adopted for coverage.

Estimation of requirements of syringes and needles

The total number of syringes and needles that may be required will depend on the number of pregnant women and infants planned to be immunised. It is expected that an ordinary glass syringe would be used at least 50 times and a needle 10 times before replacements are made. Reusable plastic syringes are also being supplied to the UIP districts. Such syringes can be steam sterilised up to 200 times. The calculations of requirements of syringes and needles is quite simple:

Total no. of pregnant women and infants to be covered x no. of doses of each vaccine (total no. of injections) divided by 50 (in case of glass syringes) OR by 200 (in case of plastic syringes) and by 10 (for the no. of needles).

A sterile syringe and needle should be used for each injection.

The total number of syringes and needles at each session should not be less than the expected number of children and pregnant women during the session. The syringes and needles should be sterilised before the sessions. Adequate quantitites of the syringes and needles should be distributed to the field workers and replacements made to them periodically.

Estimation of requirements of sterilisation equipment

Arrangements must be made for the sterilisation of syringes and needles for the immunization sessions. Each PHC is provided with an autoclave. The syringes and needles required for the sessions held at the PHC can be autoclaved the previous evening. Three or 4 subcentres may organise vaccination sessions on the same day. These subcentres must be supplied vaccines from the PHC on the day of the sessions. The feasibility of autoclaving them to the subcentres along with the vaccines must be seriously considered. This will ensure proper sterilisation of the syringes and needles, save the time of the ANMs/MPWs at the subcentres and also avoid the logistics of supplying kerosene and sterilisation equipment to the subcentres. It will also be the responsibility of the medical officers to ensure that adequate stocks of kerosene are available. This should be replenished regularly. Boiling of syringes and needles at outreach sites should be done only as an emergency and not on a routine basis. The number of syringes and needles taken to

the outreach centres should be adequate and should at least be 10 per cent more than the expected number of children and pregnant women to be vaccinated on the particular day.

Estimation of requirement of immunization cards

Immunization cards must be given to all the pregnant women and infants. The cards used for the pregnant women can later be used for the infant after the birth of the child. The cards should be in the regional language. During the first year of the programme, the need for cards for infants will be more.

The number of cards needed will be:

First year — total number of pregnant women and infants +10%.

2nd year onwards — total number of pregnant women +10%.

Manpower needs

A list of all the activities should be made and the staff allocated specific job responsibilities. The following tasks must be covered:

- Vaccination coverage of pregnant women and infants;
- Stores including vaccines. The person concerned should indent for the required quantities of vaccines and other supplies in time. He should be responsible for the distribution of the required quantities to the lower formation and also for monitoring that the supplies are used properly;
- Monitoring and supervision of services;
- Preparation and supply of health education material, advance plan for health talks in the community prior to outreach operation and campaigns;
- Recordings and keeping reports in order, compilation and analysis of the reports, forwarding the reports to the higher formations and providing feedback; and
- Surveillance of diseases.

The Strategies of Operations

The Universal Immunization Programme is an integral part of the Primary Health Care and the services are provided through the existing health infrastructure. There is no separate cadre of staff. The programme is also a long term one. The services must be continued even in the absence of the diseases in the area. The planning process must take this into consideration so that high levels of coverage are sustained over the years.

Depending upon the convenience and the facilities available it may be necessary to adopt different strategies. Whatever strategies are adopted, the aim must be to cover

all the pregnant women and children under one year in the area. The need for sustaining the services over the years also must be kept in mind.

Fixed Centres

All the places which provide health services and have adequate cold storage arrangements, i.e. a reasonably reliable electricity supply and a working refrigerator must be identified.

All vaccines should be available at each centre so that the beneficiaries do not have to visit different places for different vaccines. Vaccination sessions may be organised daily, bi-weekly, fortnightly or monthly depending upon the attendance to the clinics. A minimum of 10 children per session is usually considered to be economically viable. The day and time of vaccination session should be fixed and should be prominently displayed. All efforts should be made to hold the sessions regularly as scheduled.

If the hospital is a large one message about the immunization programme should also be displayed in other departments which are likely to be visited by the women.

Each fixed centre should have an earmarked area for coverage. Depending upon the population of the area, the expected number of pregnant women and infants should be estimated. Performance should be monitored monthly for coverage. If the attendance is less than expected additional steps may be necessary to improve performance. Poor performance may be due to lack of information, lack of motivation or due to various obstacles. The reasons will have to be found out and corrective measures taken accordingly.

It is operationally easier and administratively cheaper to organise vaccination sessions at fixed centres. The services can be provided on a regular basis and continued conveniently over the years. It should therefore be the priority to identify and establish as many fixed centres as possible.

Outreach Operations

One of the reasons for poor coverage may be attributed to the fact that the villages are not within easy reach from the fixed centre especially in places with poor communication and transport facilities. In this case arrangements would need to be made for carrying vaccines and other supplies to the villages and organising sessions at site.

The vaccination team should contact the community leaders and explain the need for early immunization of the pregnant women and children. A mutually convenient day for holding vaccination session should be fixed. For the success of the programme the village level workers in the area via., the village health guides, anganwadi worker and the birth attendent is absolutely essential.

A centre which is easily accessible to the community like a panchayat library, anganwadi centre, primary school with a cool shady surrounding may be chosen. The health workers of the area should have the list of pregnant women and infants. The contact person and the grass root level workers can collect this information effectively and easily. The contact person should be explained to collect the eligibles in time at the vaccination site. The checklist of articles which are to be carried for the out-reach sessions should be gone through and the health workers should have all the items mentioned therein. Steps should be taken to deliver the vaccines, autoclaved syringes and needles on the day of the sessions.

Arrangements should be made for repeat visits. The interval between the visits should be 4 to 8 weeks. It should not be less than one month. All efforts must be made to hold the sessions on the fixed days. If this is not possible the villagers must be informed in time and date for the next session fixed.

Campaigns / Intensive Drives

Campaigns are usually organised during the winter months in areas which cannot be covered either through the fixed centres or by the outreach operations. Teams of health workers move from one village to another carrying adequate quantities of the vaccines and other supplies. It may be necessary to mobilize manpower for a short period from other areas such as the district headquarters.

Prior groundwork is a must to make intensive drive a success. Since a large number of villagers are expected to be covered within a short period of time and the distances to be covered from the health centres is also greater, village-wise time schedule and the mode of transportation must be clearly chalked out in advance.

Active community participation would greatly facilitate the work. The village leaders, elders, teachers and others should be encouraged to keep the list of eligible children ready and collect them at the vaccination site on the prefixed day and time. Arrangement for repeat visits must be made at an interval of 4 to 8 weeks. Sustainability of the services should be carefully considered before organising the campaigns.

Scheduling of Vaccination Sessions

Fix the date and time of vaccination sessions. This should be prominently displayed at the fixed centres. In case of outreach operations, advance information must be given to the concerned community.

Sterilise the syringes and needles sometime before the session is to start as they will take a while to cool. Rinse and clean before boiling. Boil for twenty minutes. Start counting the time after the water has started to boil. Use the syringes and needles only after they have cooled. Use the syringes and needle for each injection. The syringes and

needles should be picked up by sterilised forceps. Do not touch with unwashed hands or keep on an unsterile surface.

Screen children to ascertain their recommeded age groups for vaccinations and that they are not seriously ill.

Infants are given three doses each of DPT and polio vaccines and 1 dose of BCG. DPT and polio vaccines are given together. BCG vaccine can be given with anyone of the three doses, but the sites of the injections should be different. Measles vaccine is given by subcutaneous injection at 9 months of age.

The minimum number of visits a child would have to make to complete the course of vaccination would be five. One more visit is necessary i.e. 12 to 18 months later for the booster doses of DPT and polio vaccines.

Pregnant women require TT vaccine by intramuscular injection. Older children may be given vaccines ON DEMAND. Children above 2 years of age may be given only 2 doses of DT instead of DPT and OPV.

If the vaccines have been taken out to an outreach site/subcentre it must be returned to the health centre on the same day. Mark the unopened vials in some way and return them to the refrigerator. Be sure to use these marked vials during the next vaccination session. All opened vials should be discarded at the end of the session.

The diluent used for reconstituting BCG and measles vaccines should be cooled before use. Mix the vaccines with a fresh sterile syringe and needle. Keep a record of the vaccinations done during the day in a register at the centre. These should include the name and address of each child, age, the type of vaccine and the number of dose. Note the batch number and the expiry dates of the vaccine vials used during the day.

Entries should also be made in the immunization card which is handed over to the guardian of the child. Inform the parents about the date of the next visit. Impress the need for completing the full course. Inform them that the vaccines will protect their children only if all the doses have been given. Inform them about the expected reactions. Reassure them that the health facility and its staff are always there if they need any help.

Wash syringes and needles after use thoroughly with water. Clean up the site in case of outreach operation. Inform the community of the date of the next visit. Proper scheduling is essential if immunisation activities are to be successful. Vaccination sessions must be on days and at times and places that are convenient for mothers so that they bring their children for immunization.

The sessions must be held frequently enough so that the number of children brought to each session is not so large that mothers have to wait for long periods or the staff not have time to vaccinate all the children.

Finally, the sessions must be held at appropriate intervals so that the children will receive the intended benefit from each set of vaccinations.

A vaccination session schedule shows the days and times at which vaccination sessions are to be held. It is important that mothers be informed of this schedule so that they will know when to bring their children for vaccination.

Drop-out rates

The drop out rates against each vaccine are a critical indicator of the field operations in relation to coverage or motivation. Generally, drop-out rates are calculated from the number of the first doses given and the children receivng the last dose - the third dose of DPT or polio vaccine. Drop-out rates in a magnitude beyond the expected ones, calls for immediate action. The action may be taken from any of three angles viz. motivational efforts, listing of eligibles and the nature of health services provided. Motivation efforts through the use of mass media and person-to-person contacts are essential for reducing the drop-out rates. If the eligible have been listed and follow-up visits are made by the persons involved, to all concerned, drop-out rates can be reduced further. Improving the availablity and accessibility of the health services through outreach operations, when needed ensuring a good quality of services, and adequate quantum of supplies in time, can considerably improve the credibility of the services and lead to a further reduction of the dropouts.

Community Support and Demand Generations

Motivating the Community

If the immunization programme is to succeed, the co-operation of the people is a must. This will make the work more interesting and pleasant.

We need people to co-operate if we arrange an outreach session. The help of the community is needed to find an immunization site, and borrow furniture. Their help will also be needed during a session itself for example, to register children.

People will cooperate to make the programme succeed if they want the immunization. They will not cooperate very well if they only accept immunization because we wish them to. They need to feel that their children's health is their responsibility .The services are there to help them to have something they want to value. Thererfore it is very important to make the community WANT the immunization programme. This is possible by proper motivation.

Contact the people in the community who can help and included in this group, are the following:

The political leaders (pradhans, panchayat members);
Community leaders;

Traditional birth attendants;
School teachers;
Govement staff of other departments;
Extension workers;
Women's groups;
Village health guides;
Traditional healers;
Religious leaders;
Youth organisations;
NSS volunteers.

Each community is different. The right people in the community must be identified. They should be explained the dangers of the target diseases; and about vaccines and prevention. Explain about the immunization programme and what is going to be done. Seek their help on how to motivate the people in the community. Ask for their help if there is any opposition or other problems in providing the services. Ask for their help to explain the programme to the community. Consult them before fixing the date and time. Remember if the date or time is not convenient, few will attend. Make sure to arrange the session on that day.

Make sure that the Community's Experience of Immunization is good

Be reliable, punctual, polite and friendly. Look after the vaccines carefully so that as a result of the work there willl be no disease in the vaccinated children. This will motivate others to bring their children for subsequent progamme. Give feedback to the community.

Problems in community participation

Lack of information

- About the severity of the diseases or the complication they can cause
- About the diseases that can be prevented
- About the services that are available
- About the time and place of vaccination sessions
- About the age at which vaccinations are required and the need for completing the full course.

Lack of motivation

- No faith in vaccination
- Rumour about ineffectiveness or harm

- Poor service and/or discourteous behaviour of staff
- Fear of side reactions

Other obstacles

- Vaccination centre is too far
- Time not convenient
- Inconvenient or expensive to travel to the centre

Since the reasons may differ from place to place, these must be looked into if there is a poor response from the public. Any case in a vaccinated child should be treated as a public emergency and necessary investigations conducted immediately.

High drop-out rates are indications of problems in the area. They must be looked into urgently and necessary measures taken in consultation with the staff and the community leaders.

Cold Chain

Most vaccines lose their potency by heat and exposure to sunlight. Vaccines administered with lost potency, will not protect the child and will only provide a false sense of security. Potency, once lost, cannot be restored. To keep vaccines potent, they should be kept at a specific recommended temperature. The heat sensitivity of various vaccines in the descending order is polio, measles, BCG, DPT and TT.

Thus, the "COLD CHAIN" refers to a system of maintaining vaccines at a recommended temperature during their transport from the manufacturers to the beneficiaries and storage inclusive of intermediate stages. The risk of cold chain failure increases, as the vaccine moves along the cold chain from the manufacturer to the mother or child receiving the vaccine.

The essential elements of the cold chain are:

- People to organise and manage the vaccine's distribution
- Equipment to store and transport vaccine
- Transport facilities.

The importance of people in the cold chain cannot be stressed enough. Often the cold chain is thought to refer only to the refrigeration of vaccine. Even if the finest and the most modern equipment and transportation are available, the cold chain will not be effective if the people do not handle the vaccine properly.

To manage the cold chain system, one must be sure that the following activities are adequately performed throughout the length of the cold chain:

- Obtain vaccines
- Maintain equipment
- Monitor cold chain

The specific tasks involved in these activities will vary according to the point along the cold chain at which they are performed.

Recommended temperature for storage of vaccines

Vaccine	Temperature °C	Potency retained for	Remarks
BCG	4 to 8	One year	Use within 3 hours of reconstitution and keep on ice
DPT	4 to 8	One and half years	Do not freeze
Measles	0 to 2 4 to 8	One year Six months	—
Oral Polio	2 2 to 10	One year Three months	Avoid repeated thawing
TT	4 to 8	One and half years	Do not freeze

Components of cold chain

Equipment in cold chain

Refrigerators : The refrigerator is a vital component of cold chain which helps in retaining the potency of vaccines. Most PHCs have one refrigerator each either conventional or the ICE LINED REFRIGERATOR (ILR) . If handled properly, they can maintain the temperature between 2°C and 8°C.

Do's (Must be adhered to)

- Keep the refrigerator in a cool room away from direct sunlight
- Keep the refrigerator at least 10 cm away from wall

- Keep the refrigerator absolutely level
- Fix the plug permanently to socket
- Always use the voltage stabiliser
- Keep the vaccines neatly with adequate space between the stocks for proper circulation of air
- Keep the refrigerator locked and open it only when it is absolutely necessary
- Keep ice or ice-packs in the freezer and water bottles on the shelves not utilised for the storage of vaccines so as to keep the temperature down for a longer period in case of power failure.
- Defrost periodically if the ice in freezer is more than 1" thick.
- Check temperature twice a day and maintain proper records
- Refrigerator should be used exclusively for vaccines only.

Dont's

- Do not open the door unless necessary
- Do not keep vaccines in the door of the refrigerator
- Do not keep food or drinking water in the refrigerator
- Do not keep more than one month's requirement
- Do not keep expired vaccines
- Do not use any sharp instrument for removing ice

Ice Lined Refrigerator (ILR)

ILR is a top opening refrigerator. It has lined pipes of Ice (ice-packs). These act as a buffer in case of power failure. The ILR can, thus, with an electricity supply of even 8 hours in a 24 hours cycle, keep the vaccines within safe temperature range. The bottom of these types of refrigerators is the coldest place. DPT and TT vaccines should not be kept directly on the floor of the ILR. Keep a dial thermometer inside the ILR to record daily temperature. Ideally the ILR must be used only as a refrigerator for storing vaccines even when no other refrigerator is available. The risk of cold chain failure is far less in an ILR than in a conventional refrigerator.

ILR is ideal for storing vaccines in a primary health centre. It maintains temperature even in the case of electricity failure

Defrosting of a refrigerator

Temperature in the refrigerator may rise if there is a thick layer of ice around the freezer. The refrigerator should be defrosted periodicaly. This should be done if the ice in the freezer is more than 1 cm thick.

Defrost refrigerator if ice is more than 1 cm thick

Dial thermometer

Dial thermometers have been provided to record the temperature in the refrigerator. One dial thermometer should be kept in each refrigerator, the dial thermometer should be kept in the top shelf. One person should be made responsible for recording the temperature regularly.

Recording of storage temperature

1. Temperature in refrigerators must be recorded twice daily. This is done in order to ensure that the vaccines are not exposed to temperature above 8° C and to check that the equipment is working properly.

2. The temperatures should not exceed 8° C

Vaccine carriers

Vaccine carriers are used for carrying small quantities of vaccines to the subcentres or village by the health workers They are made of insulation material i.e. polyurethane in thermocole, the quality and thickness of which determine the cold life of the carrier: the ice packs for lining the sides of the carriers should be fully frozen and the lids of the carrier should be shut properly: Use of frozen ice packs for lining the sides of the carrier increase the efficiency of the vaccine carriers considerably.

To pack, place fully frozen ice packs in carrier. Stock vaccine and diluent in the carrier. Place some packing material between DPT vaccine and ice to prevent them from touching the ice packs. Secure the lid tightly.

To keep in good condition, the vaccine carrier should be cleaned inside after each use. Keep the inside of the carrier dry when not in use. Examine the inside and outside surfaces after each use for cracks. Keep the plastic carrier out of direct sunlight.

Vaccine carriers can keep the vaccine cold for two days if the ice packs used are fully frozen and the lid is kept tighly shut.

Day carrier

Smaller vaccine carriers, which have two ice packs at the top and bottom, can carry only few vials at a time, are available.

Ice Packs

Ice packs are used for lining the walls of cold boxes and vaccine carriers to keep them cold. They are flat plastic bottles filled with water. The ice packs are prepared by keeping them in the freezer or in the freezer compartment of an ordinary refrigerator. The time taken to freeze an ice pack in the freezing compartment is reduced if the ice packs stand with their edges in contact with the evaporator and not flat on one another. Salt should not be added to the water as it lowers the temperature to sub-zero temperatures which is not recommended for DPT, DT, TT and typhoid vaccines. Ice packs will have to be prepared at the PHC for carrying vaccines to the subcentres or the outreach sites.

Cold Boxes

Cold Boxes are used to collect large quantitites of vaccine, transport large quantities of vaccine by vehicle to outreach sites and to store vaccines for several days, if necessary. To pack vaccines in a cold box and to keep in good condition the cold box when not in use, follow the same procedures as for day carriers.

Maintain vaccines : when administering vaccines to expectant mothers and infants at vaccination sites utmost care must to taken to ensure that the vaccine is not exposed to heat or sunlight.

- Select a vaccination site that is as cool as possible preferably the inside of a room
- Do not vaccinate while sitting in sunlight
- Remove vaccine and diluent from vaccine container only when needed.
- When the vaccine is taken out of the container, place the vials inside a cup containing ice.
- Return unused vials to the PHC on the same day.

Discard open and used vials at the end of vaccination session. Do not use them on the next day

- If ice packs in the carrier are still frozen, mark the unopened vials by putting a cross or red dot and return them to the refrigerator. Use them on the next day.
- If the ice in the cold container is completely melted for one day, throw away all the vaccines.

Vaccines in the Refrigerator at a PHC

- All vaccines removed from the refrigerator must be used or returned to the refrigerator after the vaccination session is over.

- To ensure that RETURNED vaccines are used first, put these vials in a box in the refrigerator marked RETURNED. Put one rubber band for the first visit and two bands if the vial has been returned after taking them out twice.
- Take out only as many vials as you would use on the same day.
- Keep the diluent in the lower shelf of the refrigerator. The diluent should not be frozen.
- Stock the vaccines in the following manner:

Freezing compartment - no vaccines, only ice pack and cubes	
Top shelf	— Oral polio, BCG
Middle shelf	— BCG (if any), DPT, TT and diluent
Lower shelf	— Bottles of water

Obtain Vaccine

Vaccines are needed to distribute to the health centres and to the outreach units that operate out of the district store. Send request for the needed vaccines from the state store. The state store will usually then make arrangements to deliver the vaccines to the district. The best way is to collect at regular intervals. For example, they may be collected once a month or once every two months. It is **recommended** that vaccine be stored no longer than three months in the district stores.

It is important that the right amount of vaccine is obtained. If too little vaccine is obtained there may be delays in immunization activities. If too much vaccine is obtained some of it may expire or it may be kept longer than the recommended time. ALWAYS CHECK THE BALANCE STOCKS BEFORE PLACING ORDERS FOR FRESH SUPPLIES. Keep 10 per cent additional vaccines as buffer stocks for any unforeseen demand. The stocks must be rotated so that no vaccine is kept for more than 3 monhts.

Before the vaccine is delivered by the state store:

- Confirm the arrival time through letter/telegram or telephone.
- Ensure that adequate storage space is available.

When the vaccine is delivered:

- Determine if the vaccine was kept below 8° C during transportation. If not, discard the vaccine.
- Check that the types and amounts of vaccines and diluent are the same as ordered.

- Check that the expiry date on each vial of the vaccine is not passed.
- Transfer the vaccines to the refrigerator or Walk-in-cooler as quickly as possible.

Large districts have been provided with cold rooms (walk-in-coolers- WIC). Cold rooms are used for the storage of large quantities of vaccines. There should be an assured source of constant electric supply and regular monitoring of the temperature. Cold rooms should have free access 24 hrs a day and all the 7 days a week, so that in case of any breakdown or power failures, the defect could either be rectified or the vaccines transferred to an alternate place for storage. One person should be made responsible for the WIC. In case of major defects, the State EPI officer and the Ministry of Health and Family Welfare must be informed immediately. Keep a list of private cold stores in the district headquarters in case of emergency or serious breakdowns.

FREEZERS have been supplied for a variety of purposes such as preparation of ice packs, preparation of ice and storage of polio, measles vaccine. DPT, DT,TT and typhoid vaccines should not be kept in deep freezers. Keep the freezers locked. The description of cold boxes and vaccine carriers have been described in earlier sections.

Cold Chain Failure

The risk of cold chain failure is greatest in the subcentre/village level. For this reason, vaccination is the most IMPORTANT LINK in cold chain.

In order to keep the vaccines safe at this level:

- only required quantities must be supplied;
- vaccine carrier must have frozen ice packs;
- vaccinations must be given in the shade and away from sunlight;
- vaccines should be kept on ice packs or in a cup of ice;
- unused vials must be returned to the PHC on the same day; and,
- opened vials should be discarded on the same day.

Do not store vaccines at the subcentre level

Potency Tests

The ultimate test of the quality of the cold chain system will be its effectiveness in keeping vaccines potent till the point of use. Testing facilities are currently available at the Central Research Institute, Kasauli (H.P.), National Institute of Communicabe Diseases, Delhi and the Enterovirus Research Centre, Bombay for testing the potency of field samples of OPV.

OPV has been taken as the indicator of the quality of the cold chain as this vaccine is more heat labile than others and it is easier to test. The test takes only 7 days to complete and does not require scarce laboratory animals.

Opened vials can also be sent for testing and the vials should be lifted from all levels - from the village to district stores. The samples should be sent packed in ice otherwise there will be a drop in the virus titre during transportation.

OPV vials must be lifted during field visits and sent to the state officer. The samples can be periodically lifted - say once or twice a month. The vaccine samples should be kept in a freezer before these can be sent to the state officer. Monitor the storage conditions very carefully to make sure that there is no fall in potency during storage at the store. While sending the samples for testing indicate clearly all the details like the place from where the sample(s) were lifted, date when it was lifted and batch number and expiry date of the vial.

Evaluation and Monitoring

Evaluation and *monitoring* are an integral part of routine progamme management at all the levels of the health services. While designing a programme, this point has to be kept in mind. Activities in this regard will centre around the objectives that can be measured. Evaluation has to be followed by action. The action may be redefining the objectives, redesigning the strategies, replanning the programme or even reconfirming the current programme.

Coverage evaluation survey for immunization is carried out on a periodic basis to provide reliable information which can be used to make changes if necessary, in the vaccination activities. It will specifically answer questions such as whether or not the vaccination coverage objectives are being met with or not. The objectives state the percentage coverage of pregnant women and infants we are expected to vaccinate in a given year. It should, however, be remembered that vaccination activity is not an end in itself. IT SHOULD LEAD TO IMMUNITY AGAINST THE DISEASE AND REDUCTION IN MORBIDITY AND MORTALITY.

The first step for any evaluation process is the systematic collection of data. For the evaluation of vaccination coverage, data need to be systematically collected on the number of children and pregnant women vaccinated, by vaccine and by age. The assessment should be done by persons who did not perform the vaccinations. The method used is the cluster sampling technique. A cluster is a randomly selected group. In this case it is a group which contains at least 7 children in the age group of 12 to 23 months.

The cluster sampling technique allows à small number of the target population to be sampled and provides data which are statistically valid. A survey containing 30 clusters of 7 children will tell us approximately how many eligibles are being properly vaccinated.

The level of accuracy of such data will be within 10 per cent either way. The level of confidence is 95 per cent which means there is a 95 per cent probability that the survey results will fall within the range listed earlier. The data will reflect coverage of the period about 1 year prior to the survey date. The results will reflect coverage of the area as a whole.

As many as 30 clusters are chosen and these must be surveyed within a restricted period of time ideally within one week.

Monitoring refers to the recording and reviewing, at regular intervals of significant and relevant data about the performance of the programme. The data may pertain to the activities of the worker, understanding of the health activity by the mothers, organisation of the services, programme logistics and the outcome of the services. This data can be collected through observing the functioning of the workers in the field, by having discussions with them, talking to the mothers in the community and by reviewing the performance records. For effective working, the frequency of monitoring has to be decided before hand. It is desirable to prepare a checklist before implementing the monitoring activities.

Evaluation in UIP

Accurate measurement of vaccination coverage is an essential step in determining expected reductions in morbidity and mortality from the vaccine preventable diseases. It is one of the ways to evaluate effective operation of the programme.

The vaccination coverage evaluation survey will help to

- give a true picture of the vaccination status of the target population
- cross check the results with the routine reporting system
- identify other agencies participating in the programme to improve coordination in the future
- identify the areas with good and poor coverage
- determine whether the vaccines are being given at the right age
- identify the positive and negative factors affecting the programme

Further details of coverage evaluation will be given to individuals who are given the responsiblity of actually undertaking the evaluation studies.

Surveillance

Surveillance is the collection of data about a target disease and then used to improve actions for preventing the incidence of these diseases. Surveillance is undertaken for identifying the problem areas, monitor the progress of the programme and assess the

impact of the services. Effectiveness of the surveillance depends upon standard case definitions of the target diseases, regularity of reports and the capabilities of the analysis made locally.

Surveillance consists of five elements viz, data collection, analysis, investigation, remedial action and feedback.

Surveillance leads to documentation of cases, to quantify disease prevalence, thereby reinforcing the need for immunization and measure the incidence of disease, a reduction of which, can serve as an indicator.

Sentinel Centre

A sentinel centre is a specially selected centre which is representative of the area, has a large attendance of patients, has facilities for recording and reporting of disease cases, has the capacity to supply the desired information beyond the routine procedures and has a person specially interested in this type of work. Sentinel centres are selected on the basis of a report of a sufficiently large number of target disease cases, is neither too large nor too specialised to have a bias of selection of cases.

Various functions of the sentinel centre include:

- selecting the information desired,
- design forms for reporting;
- identify disease control measures at the periphery·
- organise a good team work,
- analyse the relevant data and use it for policy decisions;
- and provide the requisite feedback to the different formations.

CHAPTER 9

HEALTH AND NUTRITION EDUCATION

HEALTH AND NUTRITION EDUCATION AND IMPORTANT MESSAGES TO THE COMMUNITY

Introduction

Health education is rather an abstract term meaning different things to different individuals. To some, it is a matter of public relations aimed at publicising the activities of health departments. Some consider it synonymous with health propaganda. Many equate it with transmission of information about health and disease from the expert professional to the lay client. "Health education is a process that informs, motivates and helps people to adopt and maintain healthy practices and lifestyles, advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end'

Nutrition education aims to create awareness about nutritional problems and dietary needs of individuals, i.e. pregnant women, nursing mothers, infants and young children and/or adults performing different duties. Nutrition education also creates an awareness about hygienic practices relating to food processing, conservation etc. This is done by communication of a package of knowledge covering elementary, yet most relevant ideas, about balanced diet, improved cooking and dietary practices, nutritional needs and health and hygiene to target population in particular, This package could be devised by the district and even by the block level functionaries with a little assistance from the experts in the field and short duration training.

Health and Nutrition education through ICDS system

One of the objectives of the ICDS scheme is to enhance the capability of the mothers to look after the normal health and nutritional needs of their children and themselves through health and nutrition education (HNE). In any urban/rural ICDS projects, women in the age group 15-45 years numbering about 20,000 are targetted to be provided with HNE and 100% coverage is to be progressively reached. In tribal projects, about 7000 women in the age group of 15-45 are to be progressively brought under health and nutrition education programmes for 100% coverage. However, priority is to be accorded to nursing and pregnant mothers, with follow up of mothers, whose children suffer from malnutrition or frequent illnesses. HNE messages are given to the beneficiaries through specially organised courses and campaigns in project areas, house visits by AWWs, cooking demonstrations, use of mass media and other forms of information dissemination. HNE capabilities have also been built into the national programmes for mother and child development and other national programmes of socio-economic

development. The most important ones are the mobile food and nutrition extension units of Dept. of Food, health and nutrition education facilities in SNP, World Food Programme, nutritional anaemia control, prevention of nutritional blindness, Goitre control programme, DWCRA, IRDP/NREP, *etc.* of the Rural Development sector. Aspects of safe water supply, environmental sanitation are also linked through the health and nutrition education programmes to derive maximum impact on the nutritional and health status of the community. Information and broadcasting Division at the centre and states/UTs provide publicity support to ICDS wherever possible.

ICDS functionaries involved in HNE

Anganwadi Worker (AWW) provides health, nutrition and population education to eligible and needy mothers at the Anganwadi Centres and during home visits. She helps ANMs in the health sector to provide health and nutrition education to mothers whose children are either malnourished or fall ill more often. To the extent possible, in consultation with her superiors, she also develops HNE messages. General community education in areas of child-care needs, is also part of this activity. The most important work linked to HNE and population education is mass community contract and liaison work and AWW takes care of these aspects in her project areas.

Supervisor or Mukhya Sevika guides AWWs in organising HNE campaigns in their respective villages. She will also devise simple HNE messages, utilise publicity materials, besides helping AWWs to implement HNE activities.

Child Development Project Officer (CDPO) arranges educational demonstration programmes/ campaigns on nutrition, health, hygiene, safe drinking water, sanitation etc, with assistance/help from other project functionaries.

In the health sector, **Auxilliary Nurse Midwife (ANM)** looks after a health centre of about 5000 beneficiaries. They advise mothers on various aspects of care during pregnancy, besides nutritional aspects during pregnancy and lactation. They also provide family planning education to couples for motivating them to family planning individually and in groups. Immunisation, hygiene, treatment of minor ailments, are also included in the educational programmes. ANMs use Mahila Mandals, village committee meetings to deliver HNE messages to the community.

Lady Health Visitor (LHV) arranges group meetings with community leaders and involve them in spreading the HNE messages in ICDS projects. They participate in all the promotional campaigns in their project areas. They conduct MCH and FP clinics to deliver HNE messages to the mothers visiting these clinics.

Medical Officer (MO) plays a different role which is continuous 'on job education' of AWWs at the sub centres. MOs procure and provide relevant educational and promotional materials on health, nutrition, hygiene etc. for use in ICDS projects.

Health and Nutrition messages to the Community

HNE messages should be simple, clear, directed to the target groups and relevant to the community. They should be delivered at low cost, avoiding costly inputs due to resource constraints. The messages should be delivered through interpersonal communication methods synchronised with 'mass media approach'. Health and Nutrition messages should be repeated frequently in different situations (*i.e.*) it is constantly reinforced to become effective. HNE programmes should be evaluated to judge its success and this is to be done by measuring changes in knowledge, attitude and practices (KAP), improvement in health and nutritional status.

Important messages on health and nutrition to be delivered to the community are as follows :

Family Welfare

- Birth control is good and safer than preganancy.
- Plan your family with reference to number of children you want and when you want.
- Adopt birth control measures in consultation with the doctor and after considering their safety, effectiveness, convenience, availability and cost.
- Sterilisation of male or female is simple, safe, and conducted **free** of charges in Govt. hospitals. There are no side-effects on men or women.
- Women should **not** use oral contraceptives when
  - suffering from varicose veins (steady pain in one leg or hip).
  - suffered a stroke, liver diseases, cancer of breast or womb,
  - infant is to be breast-fed
- Consult a doctor on the use of oral pills.

Antenatal, Intranatal and Postnatal Care

Care of the mother during pregnancy

- Eat nourishing diet to provide more balanced nutrition (more calories, protein and protective foods). Consume more green leafy vegetables, sprouted pulses, seasonal fruits, some quantity of milk (or reconstituted milk) and milk products to keep her and the baby healthy.
- Avoid large/bulky meals, excessive spices, excessive salt or salty foods.
- Regular antenatal checkup in PHCs/sub-centres, Govt. hospitals at least 3 times.
- Look for early signs of child birth difficulties and refer such case to PHC/sub-centres/Govt. hospitals.
- Take iron and folic tablets (IFA) for 100 days (last trimester) which are available from PHCs/sub-centres.
- Two doses of Tetanus toxoid injections are to be taken by all pregnant mothers at the PHC/sub-centre.
- Continue to do light work, without getting too tired.
- Maintain personal cleanliness, avoid smoking and drinking alcohol.
- Bleeding before birth is dangerous and contact PHC/sub-centre immediately.
- PHC/sub centre is a safer and cleaner place to deliver a child.
- Bleeding (minor or major), severe anaemia, toxaemia of pregnancy (swelling of feet, hands and face) are damger signs during pregnancy. Consult a doctor at PHC/sub centre/Govt. hospital.

Care of mother after delivery

- Consume adequate and balanced diet to replenish nutrients drawn by mother's milk and nutrients lost due to pregnancy. Consume more energy-yielding foods to produce more milk, and protective foods.
- Consume same kinds of foods recommended during pregnancy, but in slightly increased quantities. Mixed cereal diets and addition of millets like ragi, green leafy vegetables, seasonal fruits, pulses (sprouted/fermented), milk and milk products are useful, and inexpensive.
- Bathing is not harmful.
- Start breast-feeding soon after child birth.
- Express milk from the breasts if the baby does not suck milk sufficiently. Keep breasts clean.
- Continue lactation for as long as possible even upto two years since it helps in child spacing.
- Continue to feed the infant even when the baby or mother is ill.

Care of the baby at birth and new born

Provide new, sterilised blade or freshly boiled, sterilised scissors for cutting the cord. If the baby does not cry seek doctor's help immediately.

- Keep the cord dry to prevent any infection, cut the cord close to the body.
- After cutting the cord, put the baby to the breast, to provide warmth and feed.
- If the baby does not cry, seek doctor's help immediately.
- Take the baby to PHC for checkup, if the baby is 'yellow' beyond 4 days or turns blue or develops fits.
- Keep baby warm, free from cold or excessive heat, free from dirt and smoke.
- Seek medical attention to look into problems like vomitting, convulsions, fevers, stoppage of sucking breasts (which may be due to tetanus or bacterial infection of blood).
- New born baby receives its first feed 8-12 hours after birth and thereafter at 3-4 hours interval, for 10 mts. on either breast.
- Artificial feeding (e.g. cow's milk) is advised only when breast milk is not available, mother is seriously ill, or breast feeding is not possible on medical grounds.

Breast feeding

- It is a tradition among Indian women and best for the new born.
- Breast milk contains **most** of the nutrients necessary for growth and development in correct proportions and is therefore a **'complete'** food for the baby.
- Breast milk is easily digestible, has anti-infective properties to protect the baby in the early months of its life (protects against diarrhoea, measles, and polio).
- Breast feeding is **safe, clean** and **simple**. Bowel upsets are rare in breast-fed babies.
- The first yellowish, 'sticky' secretion (after delivery) from the breasts is called **'COLOSTRUM'**. It is rich in protein, protective antibodies and vitamin A and should be fed to the babies.
- Breast feeding is a happy experience for both the mother and child. Breast feed the baby for as long as possible.
- Breast feeding enables longer periods of infertility after birth, compared to mothers who do not breast-feed their babies.
- Bottle feeding is more risky and hazardous in poor environments with fuel shortages, lack of safe water and storage facilities, compared to breast feeding.
- Breast feeding is a greater strain on the mother since she is nourishing a rapidly growing baby whose food needs are increasing steadily. Nursing mother should therefore eat an adequately balanced diet during lactation. Such a diet includes more cereals, pulses, green leafy vegetables, milk and milk products, animal foods if affordable or acceptable besides clean, boiled, cooled water and other fluids like fruit/vegetable juices.

Immunization

- Every effort should be made to give all vaccinations to the child before the 1st birth day. The best is to follow the national immunization schedule.
- Immunize the child to protect him from six killer diseases viz. Measles, Polio, Diphtheria, Pertussis (whooping cough), Tetanus and TB.
- For institutional deliveries, BCG injection is given at birth, or before the baby leaves the hospital.
- Minor illnesses like cough, cold, diarrhoea, malnutrition are no obstacles to immunization. A malnourished child needs immunization even more urgently since this child is more vulnerable to the six killer diseases. Even if the child is not well, the child may be immunized.
- Only very few infants and children develop side effects after vaccination, (like pain at the site, fever, small blister, rashes etc.) They are normal and in any case, doctors at PHC/hospital may be contacted immediately.
- The child will be fully protected, **only** after it has received 1 BCG, 2 DPT, 3 OPV doses and 1 measles injection to complete the course, at the **correct time**.
- Even if there is delay in starting the schedule of vaccinations, it is desirable to get all vaccinations in consultation with the health staff at PHC/Hospital.
- Get the vaccination done only from reliable sources.
- Avoid giving injections/vaccinations during rainy seasons/polio epidemic.
- Polio affected child should get nourishing diet and more exercises to strengthen muscles of rest of the body.
- Help polio affected child to walk with the aid of crutches, poles or other support.
- Measles vaccine is **not** recommended before 9 months of age.
- Protect pregnant woman against tetanus since immunization protects the babies from neo-natal tetanus infections. Give her TT_1 and TT_2 with 30 days interval between them.

(For more details, refer to chapter 8)

Prevention of common communicable diseases

Malaria

- Malaria is spread through mosquito bites.
- Mosquitoes breed in stagnant water.
- Do not let any water collect in the house, verandah, open yards, garden, lawn, etc. as mosquitoes can breed in dirty water collection.
- Do not keep any empty containers like tins, buckets, bottles, tyres, etc. in the open, where water may collect.
- Do not keep water tanks/drums on the roof of houses uncovered.
- Do not allow continued presence of water in any place such as tanks, cisterns, air coolers, flower cases, etc. for more than 6 days at a stretch.
- All water containers such as tanks, cisterns, air coolers, buckets, flower pots, should be emptied and scrubbed dry once a week.
- Get all leaking taps and hydrants repaired.
- House drains must be maintained properly repaired and cleaned.
- Blocked roof gutters should be cleaned specially before rain.
- To prevent mosquitoes, keep the neighbourhood clean and use mosquito nets, while sleeping
- If you suspect malaria or suffer from any fever, go to a Health Centre / Hospital for a 'blood test'.
- The treatment and examination of blood for malaria is **free**.Start treatment immediately.
- Take tablets as a preventive measure, only after consulting the health worker / doctor.

Tuberculosis

- Tuberculosis is an infectious disease.
- Tuberculosis is preventable.
- Tuberculosis is not hereditary.
- Tuberculosis spreads through sputum and cough.
- Persistent cough is an important symptom of tuberculosis.

- Tuberculosis is completely curable with regular and continuous treatment over long periods.
- Use facilities for diagnosis and treatment available at Government hospitals and other health clinics / centres.
- Protect all infants and children from tuberculosis by BCG vaccination.
- Avoid spitting on the floor. Practice good hygienic habits.

Leprosy

- Leprosy is like any other disease.
- Leprosy is caused by germs. It is neither hereditary nor a curse of God.
- Leprosy can occur at any age, in man or woman.
- Learn to detect leprosy early. Early signs of leprosy are discoloured patch, loss of sensation, tingling sensation in hands and a thickened nerve.
- Most leprosy cases are non-infectious.
- Leprosy is completely curable with regular treatment.
- Infectious cases can be made non-infectious by prompt and adequate treatment.
- Early detection and regular treatment prevent deformities and disabilities due to leprosy.
- Help to overcome fear, encourage early detection and sustained treatment.
- Leprosy patients can continue to live at home and do normal work while under regular treatment.
- Do not isolate leprosy patients. Accept them in the family and in the community.

The following routine instructions are useful for quick recovery from Communicable diseases

- Complete bed rest.
- Drink lot of fluids.
- Provide nutritious, easily digested foods.
- Continue to breast-feed infant (where applicable).
- Isolate (healthy) children from the infected ones (like measles, diphtheria).
- In many cases, medication is not required but doctors advice may be sought in PHC/Sub centre/hospitals.
- Seek medical attention immediately for complications like pnemonia, meningitis, severe abdominal pain etc.

- Antibiotics are not useful when polio has set in. Pain killers can be given under doctors supervision.
- Do not massage the muscles of polio affected child, since it may cause further deterioration.
- Cover nose and mouth while sneezing to prevent spread of TB infection.
- 'Phlegm' should not be exposed but collected in closed containers and burnt away from homes.

Weaning and Supplementary feeding

The gradual switching over of the child from breast milk alone to other foods in called 'weaning'. This is done mostly after 4-6 months of birth. Infants cannot digest semi-solid or solid food supplements at this stage. Only liquid supplements are to be given, with gradual reduction in breast milk. Three stages of supplementary feeding are recommended after 4-6 months and they are:

Liquid supplements (after 4 - 6 months)

- Animal milk diluted with boiled, cooled water, and sugar added to taste.
- Reconstituted milk from skim milk powder, (when animal milk is not available or expensive).
- Puree made from ripe bananas, or juice of fresh fruits like oranges, tomatoes, mosambi etc, diluted with clean, boiled cooled water.
- If fresh fruits are expensive, or not available, green leafy vegetable soup may be given (boil green leafy vegetables in water, strain through a clean muslin cloth, add little salt to taste).
- Cod or fish liver oils are good supplement.

Some points to remember

- Gradually reduce amount of water used for diluting milk so that, in few weeks. baby gets undiluted animal milk.
- Fruit juices can be started even as early as 3 months to provide more protective foods.
- Start with few drops of fish/cod liver oils and gradually increase to 1/2-1 TSP/ day. It is mixed in milk and given to babies.

Semi solid, mashed supplements (about 7-8 months)

- Give cereal preparation in the form of porridge or gruel, with sugar to taste. Suji, wheat atta, ground rice/millet may be given in the semi-solid form.
- Mashed potato (well cooked), with little salt, and ghee or butter to taste.
- Green leafy vegetables boiled in small quantities of water and mashed.
- Non green leafy vegetables boiled in water after removing skin and seeds.

Other choices are

- Boiled egg yolk/white.

- Finely minced or ground meat (well cooked).
- Boiled/mashed fish (add salt to taste).
- Finely cooked/mashed dals (add salt to taste)
- Mashed bananas or stewed fruit pulp.

Points to remember

- Pulse and meat or fish preparations may be given alternately.
- Avoid over-feeding which may lead to digestive upsets or complications.
- When supplements are introduced, frequency of breast feeding may be reduced suitably.

Solid supplements : (Introduced when the baby starts cutting teeth)

- Chopped, small pieces of vegetables (green leafy vegetables carrots and potatoes) boiled till soft.
- Soft cooked rice, chappati.
- Hard biscuits, piece of bread toast.
- Slice of raw carrots/fruit segments after discarding skin and seeds.

Points to remember

- Mothers should be patient and resourceful, not too serious.
- Offer only one type of food at a time, for a few days continuously, till the baby gets used to new taste.
- Small feeds at frequent intervals may be given.
- Avoid foods which cause digestive upsets or allergic reactions, and consult a doctor immediately.
- Allow the baby some choice of food.
- Give plenty of clean, boiled, cooled water.
- Hot weather, teething, cold or other minor ailments, take away much of the appetite.
- Force-feeding may result in vomiting. If appetite does not return to normal soon, consult a doctor.
- In case of rapid loss of weight or vitality, growth faltering, seek medical attention at PHCs/SHC/hospitals.

Instructions to prepare and feed weaning foods hygienically

- Mother should wash hands of mother before handling, preparing and serving food.
- Use clean vessels for preparation, cooking, serving and storage.
- Use freshly washed, peeled fruits, vegetables only.
- Cover food from dirt, insects.
- Store foods in cool, airy place.
- Cooked preparations should not be kept longer than 1-2 hrs in hot weather.
- Foods can be kept overnight under refrigerated conditions only.
- Always use clean, safe water for cooking and drinking.

To improve nutritional status of preschool and school children, adolescents

Pre-school children

- Weigh the child regularly for 'growth monitoring' at AWCs/PHCs/sub centres/ hospitals.
- Provide balanced diet containing energy and body building foods, protective foods in appropriate quantities.
- To prevent nutritional blindness use vit. A [200000 IU] once in 6 months, from PHC/AW centre.
- Use Vit. A/carotene-rich foods daily (green leafy vegetables, yellow coloured vegetables and fruits).
- Consume iodised salt to prevent iodine deficiency disorders, specially in goitre prone areas.
- PHCs/AWCs make available Iron and Folic acid (IFA) tablets to prevent anaemia and the tablets may be taken, besides consuming iron-rich foods like green leafy vegetables, sprouted pulses, jaggery etc.

School children and adolescents:

They need more energy-rich and body building foods due to spurt in their growth rate, increased physiological needs and to compensate for their food fads and fallacies, faulty food habits etc. The following hints are useful to improve their health and nutritional status :

- Improve family diets to provide more balanced nutrition. They need more energy, protein and specially protective foods, Iron and Calcium.
- School children may use the services of Govt. sponsord feeding programmes **without substituting** home diets, where possible.
- Girls at 'menarche' need more iron-rich foods and take advantage of the nutritional anaemia prophylaxis programme through PHs/AWCs to receive IFA tablets.
- Food fads, fallacies, faulty food habits can be overcome by 'diet counselling' and participating in HNE campaigns.

Balanced Diet, Storage, Preparation, Cooking and serving food, improving quality of foods at low cost

Food provides energy for carrying on our daily routine of work, and satisfies hunger. Food is needed for growth and repair of body tissues. Food also protects the body from deficiency diseases, infections, besides regulating body's processes. Balanced diet is important to all people, more specially to the vulnerable groups viz. young children, expectant and nursing mothers.

Careful and judicious selection and combination of food stuffs included in following food groups, consumed in appropriate quantities, will provide balanced nutrition :

- Cereals like rice and wheat, millets like ragi, bajra, maize, jowar and their products (Suji, Atta, Flours)
- Pulses and pulse products, sprouted pulses, fermented pulse preparations.
- Green leafy and yellow coloured vegetables, roots and tubers, other vegetables.
- Flesh foods, including meat, liver, fish, chicken, eggs etc.
- Sugar and jaggery.
- Milk and milk based products (skim milk powder, yoghurt, paneer cheese)
- Roots and oilseeds.
- Nuts and oilseeds
- Oil and fats
- Seasonal fruits.
- Water (boiled, cooled, clean)

Storage, Preparation, cooking and serving food stuffs

Storage : Good storage saves time, money, and food. It is desirable to contact Govt. Storage Divisions about the use of pesticides, chemicals, storage methods.

- Select only good quality foods (pure, wholesome). All produce damaged, wilted, or infested by insects or pests be discarded or not purchased Store disease free commodities only.
- Clean the grams to free from dirt, foreign matter and store them at low moisture levels by drying food grains.

- Use airtight containers to store grains.
- Coating of pulses with vegetable oils (mustard, coconut, castor, groundnut, sesame) and keeping in bags or other containers, protect the pulses for 5-6 months., without spoilage
- Discard damaged, wilted portions of vegetables before storage.
- Cover succulant vegetables with moist cloth.
- Dry vegetables (e.g. onions, potatoes) may be kept in dry, ventilated containers.
- Do not expose vegetables to sunlight and air, both of which destroy Vit. C, and carotene; store them in shade.
- Do not cut and store vegetables overnight or for long hours
- Leafy vegetables get damaged easily if subjected to pressure; so pack them loosely in ventilated containers.
- Keep food commodities free from contamination by soil-borne and other pathogenic organisms.

Preparation

- Scrape or peel the vegetables thinly to conserve nutrients.
- Cut vegetables after washing to minimise loss of nutrients.
- Cut vegetable into big pieces and just before cooking.
- Soaking vegetable pieces in water for long time leads to loss of water-soluble nutrients.
- Use top of the green leafy vegetables since they are rich in carotene, calcium, iron and folic acid.
- Persons suffering from contagious diseases should not prepare or otherwise handle food.
- Keep yourself clean by developing good personal habits.
- Use separate container for collection of trash materials.
- Waste food can be fed to cattle or buried or burnt away from the house.
- Keep cooking area clean to keep away household pests and avoid sickness.
- Keep good air circulation to remove smoke which causes irritation. Smoke outlet (Chimney) is useful, specially in the kitchen.

Cooking:

- Pressure cooking is good since it conserves maximum of nutrients otherwise lost, saves time and fuel.
- Use minimum quantities of water to wash and cook rice. Do not drain rice water or canjee after cooking.
- Use parboiled rice since it is more nutritious, compared to highly milled rice.
- Include at least one green leafy vegetable in any form daily.
- Use *fresh* vegetables since they are crisp. Stale vegetables have lost much of their nutritive value and crispness.
- Do not overcook vegetables since it results in loss of nutrients, affects flavour, taste and texture.
- Avoid use of soda in cooking vegetables, and for softening pulses, since soda destroys vitamins.
- Cook vegetables in closed containers, for minimum required time, using small quantities of boiled water to start with.
- Green leafy vegetables do not require extra water to cook. Moisture in the vegetables after washing is sufficient.
- Water that is left behind after cooking vegetables should be used in soups, dals, gravy or other liquid preparations like sambhar/rasam.
- Oil turns rancid when exposed to humid atmosphere or handled with wet spoons/ laddles. Rancid oils are difficult to digest and less nutritious.
- Use minimum quantities of oil for frying and avoid over-heating, reheating of oil.
- Use oils with high smoking temperature (e.g. mustard oil, sesame oil) for frying food at high temperature.

Serving

- Cooked vegetables/food may be served as quickly as possible since food tastes better.
- If holding before serving is unavoidable, store food in cool, dry place.
- Fried foods are generally difficult to digest, specially by young children, therefore give them only very small quantities of fried foods.
- Fruits and vegetables eaten raw, should be washed thoroughly in clean water.

- Every one enjoys eating and make it a pleasant time by serving food in clean containers, in clean and cheerful surroundings.
- Keep serving dishes covered, if flies and insects are a problem.
- Do not touch prepared food with dirty hands/spoons.
- Pick up food scraps from the floor after each meal, sweep and clean the floor/ room surface.
- Baby's dishes and dishes for the sick should be cleaned thoroughly, dried and kept separately from the dishes used by rest of the family.
- Avoid left over foods or left over foods should be stored in clean, covered container. Heat well for 15 minutes, if the same is to be used.

*To improve nutritional quality of foods at **low cost,** the following hints are useful*

- Use a variety of cereals and millets, instead of depending on one type of staple. Use multi food mixes made from cereals and pulses + oil seeds + green leafy vegetables. They are inexpensive and nutritious.
- Do not select/consume foods on 'prestige' considerations alone.
- Sprouted and fermented pulse preparations are more nutritious, easily digestible and not expensive. They can be made in the homes easily.
- Ground nuts and jaggery in small quantities is advantageous.
- One egg a week, if acceptable/affordable is useful.
- Milk, if available at reasonable cost, is recommended for young children, and mothers otherwise, skimmed milk power can be used, after reconstitution, since it is cheaper than milk.
- For economic reasons and nutritional considerations, raise a kitchen garden in the home; 'Nutrition garden' in schools or institutional areas, creeper vegetahles on roof-tops.
- Consume some vegetables (like tomato, cucumbers, onions, carrots, beet root, radish) **raw** after thoroughly washing them in clean water.

General Care of eyes and ears

Care of eyes

- Wash your eyes to keep them clean.
- Keep away from persons with sore eyes.
- Protect the eyes from dust, dirt, smoke and bright sunlight.
- Use clean and separate towel or handkerchief for each individual.
- Do not rub the eyes with dirty fingers.
- Personal cleanliness and hygienic care will protect your eyes and prevent infections.
- Avoid use of 'kajal' or surma. If used, always use clean and individual applicator.
- If the eyes appear red, swollen or watery, consult your doctor immediately.
- Avoid self medication. Get the eyes checked periodically.
- Protect your eyes from injuries.
- Keep knife, needles, pens, pencils and other articles with sharp edges, away from children.
- Select toys which do not have pointed ends.
- Games like guli-danda, fire crackers, bow and arrow, fire crackers should be discouraged.
- Child below six years should not be encouraged to read fine prints. It may strain the eyes.
- Do not neglect eye strain.
- Take care that there is enough light while reading.
- Diseases such as diabetes and syphilis should be effectively treated as early as possible because it can lead to eye complications.

Care of the ears

- Do not bathe in dirty rivers and ponds.
- Do not use pins and needles in your ears to remove wax or any other material.
- Do not expose ears to loud noise.
- Do not hit on the ear.
- Do not put hydrogen peroxide in child's ear.
- Do not neglect cough and cold.
- Look for early signs of deafness, and consult doctor.

Personal hygiene, environmental hygiene and sanitation

Personal hygiene

- Bathe the children and change their clothes daily.
- Teach children to wash their hands cleanly after bowel movement, using toilets and before eating food or handling food.
- Teach the community how to use sanitary latrines, while discouraging open air defaecation.
- Do not walk barefooted.
- Brush teeth regularly as soon as getting up from bed and after each meal preferably.
- For young children, do not give candies, sticky sweets, cola beverages which are harmful.
- Cut finger nails short.
- Scrupulously avoid contacts with sores, scabies, lice, ring worm and skin infections, and prevent use of clothes, towels of people suffering from these infections.
- Treat communicable diseases/infections promptly at PHCs/Sub-centres/Govt. hospitals.
- Avoid intimate contacts with domestic pets and keep them away from main dwelling.
- Avoid spitting and use spittoons only, if at all, and destroy the same.

Environmental Hygiene / Sanitation

- Always insist on the use of **safe drinking water** from reliable source.
- Discourage open air defaecation, and encourage the use of sanitary latrines.
- Do not allow pet animals to 'pass' near homes.
- Keep all kinds of pet animals far away from living areas, since they can spread diseases, spoil environment.
- Lice and fleas spread diseases, delouse the whole family as a precaution.
- Clean, sweep, wash the floor, walls regularly, as often as possible and preferably after cooking/serving meals.
- During epidemics of gastroenteritis, provide clean, boiled water to all members of the family.

- Keep water and food always covered to prevent access by flies, insects like cockroaches.
- Dispose of quickly left over foods, dirty dishes etc. since they attract flies, breed disease-causing germs.
- Do not consume roadside or street foods which are kept open and uncovered and therefore, exposed to dirt and filth, and more likely to spread disease.
- Allow persons suffering from contagious and infectious diseases like TB, Cold etc. to eat separately. Do not allow healthy persons to use their plates, vessels *etc.*
- Do not allow domestic/pet animals pollute public water sources, ponds, tanks, *etc.* used for drinking/cooking purposes.
- Seek assistance of local officials to protect community water sources at regular intervals to provide safe water supply.
- Avoid smoky environment by using smokeless chullahs or biogas.
- Keep drains without stagnation of filth and water, and well covered.
- Keep surroundings of water sources neat and clean, without accumulation of garbage, filth *etc.* Preferably bury such filth or burn them away from home.
- Avoid passing stools near water source.
- Do not wash clothes of affected persons close to water source.
- Protect wells with a parapet wall and platform to prevent pollution of water.

(For more details, refer to chapters 4 and 5)

Management of ARI

Three forms of ARI can be detected by the following symptoms :

Mild : Cough present, no rapid breathing or chest indrawing.

Moderate : Cough and rapid breathing (more than 50 per minute) present, no chest indrawing.

Severe : Cough and chest indrawing present, inability to drink liquids.

- Mild ARI patients need the following supportive services only, at home :
  - Nutritious food
  - Plenty of fluids to drink.
  - Keep air passages clear.
  - Child with cough should be kept warm but not overwrapped.
- Moderate ARI cases require anti-microbial therapy in consultation with the doctor and supportive services are to be provided at home as mentioned for mild cases.
- Severe ARI cases need referral to a PHC/Hospital immediately —
- The following preventive measures are recommended :
  - Improve nutritional stauts of the patient by giving nourishing diet.
  - If the child is breastfed, continue breast feeding.
  - Reduce indoor smoke exposure by installing smokeless chullah or using biogas.
  - Provide immunization for measles, diphtheria and whooping cough, if not given earlier.

(For more details, refer to chapter 7)

Management of Diarrhoea

An important job of the ICDS functionaries is to help prevent diarrhoea by teaching the people some simple facts about food and feeding children, water, hygiene, and immunization

Food and Feeding Children

- Exclusive breastfeeding, whenever the baby wants, is very important in the first 4 to 6 months of life. Breastmilk is the **best** food for babies of this age and helps to prevent and stop infections, including diarrhoea. Breast feeding can continue for at least 2 years.
- When breast feeding is not possible and other milk formulae must be given, it is better to give them with a cup and spoon rather than a bottle. Feeding babies milk from bottles is not good because it is hard to keep bottles clean.
- It is important that mothers know that they should eat **more food than normal** during pregnancy and lactation and when they are breastfeeding.
- At 4 to 6 months, all babies should start to have other foods. Soft, mashed foods are best, while continuing breastfeeding.
- Foods should be "energy-rich". Most staple foods (such as cereals, roots, tubers) do not contain enough energy per unit weight for infants and young children. Where possible, some oils, fats, or sugar should be added. The diet should be varied with addition of legumes, animal foods, fresh fruits, and green leafy vegetables. The foods should be locally available, acceptable and within the reach of the common people.
- All foods should be fresh and prepared in a clean place, using clean pots and utensils.
- Cooked food should be eaten while still hot or well heated again before eating.
- Uncooked food stuffs should be washed well in clean water before eating (e.g. vegetables in the form of salads).
- Home made gruels, soups or sugar-salt solution, coconut water, weak tea, boiled water, rice water may be given (1/2 cup or 50-100 ml) slowly after passing of each stool, with the help of cup and spoon.
- Potassium-rich foods are very useful. Give any of the following : Ripe bananas, papaya, cooked pumpkin, carrots, potato, green (tender) coconut water, fruits or their juices etc.

Water

- Drinking water should be taken from the cleanest possible source, preferably it should be boiled before drinking. This water should be kept in a clean, covered container and used **only** for drinking.

- Washing of the body, clothes, or pots and utensils should not be done at the source of drinking water.
- Stools and urine should not be passed in or near the source of drinking water

Hygiene

Hygiene concerns activities to stop germs from getting into the body. These activities involve the village, the household, and each person. The messages in the previous sections about food preparation and water are also about HYGIENE.

- Dirt, rubbish, stools, and urine contain germs which cause infections, including diarrhoea. Avoid contamination by these.
- Stools and urine should be passed in a latrine, which should be kept clean. If there is no latrine, they should be passed in one place away from the village and away from the source of drinking water. Stools passed by children near the house should be taken away or buried.
- Hands should always be washed well after passing stools and before preparing food, eating, or feeding children. Children's hands should be washed too. If possible, soap should be used each time.
- Rubbish should be burnt, buried, or taken to a place far away from the village and away from the source of drinking water.
- Flies carry germs from dirt, rubbish, and stools into the house and onto food. Flies should be kept away from stools (by burying stools), from latrines (by keeping them clean), from rubbish (by burning or burying), and from food (by keeping it covered).

Immunization

- Measles almost invariably attacks every child and may cause severe illness producing diarrhoea and undernutrition. So immunizing child against measles is very important step towards prevention of diarrhoea. The measles vaccine is usually given at 9 months of age of a child.
- If there is dehydration, it is preferable to use ORS (using standard packets as per WHO formula).
- Refer severe cases with dehydration to hospitals for treatment (with ORS and I.V. fluids under doctor's observation/advice).
- As a rule, antimiscrobial drugs have limited role in the treatment of acute diarrhoea.

(For more details, refer to chapters 4, 5, 6 and 8)

Control and Treatment of intestinal parasites

Several parasites like round worms, threadworms, whip-worms, hook-worms, tape-worms, cause different kinds of diseases in human beings. These can be eradicated by appropriate measures which are easily practised in the homes:

- Use sanitary latrines, avoid open air defaecation, wash hand thoroughly after using the toilet.
- Wash hands preferably with soap and water before handling, preparing food and eating.
- Protect food from flies, dirt etc. by keeping the food covered.
- Cut finger nails short.
- Give appropriate deworming medicines to children and other members of the family.
- Avoid consumption of under-cooked meat preparations especially pork and beef, (to protect tapeworm infections).
- Improved sanitation, safe water supply eliminates parasites causing dysentery.
- Good nutrition helps in preventing the diseases caused by intestinal parasites, therefore consume nutritious food.

(For more details refer to chapters 4 and 5)

CHAPTER 10

INTEGRATED CHILD DEVELOPMENT SERVICES

INTEGRATED CHILD DEVELOPMENT SERVICES

Introduction

The National policy for children, enunciated in August 1974, declares children as "a supremely important asset" of the nation, whose "nurture and solicitude" are the responsibility of the nation. It affirms that it shall be the policy of the state "to provide adequate services to children, both before and after birth and through the period of growth, to ensure their full physical, mental and social development".

In pursuance of the National policy for children and recognising that it is in early childhood that the foundations for physical, psychological, and social development are laid and that provisions of early childhood services, especially to the economically weaker and more vulnerable sections of the community, will help prevent or minimise the wastage emerging from infant mortality, morbidity, malnutrition and stagnation in schools, the Government of India launched the Integrated Child Development Services (ICDS) Scheme in 1975 in 33 pilot projects. Gradually it has expanded to 2452 projects by the March, 1990.

Objectives

The objectives of the ICDS are to :

- improve the nutritional and health status of children under six ;
- lay the foundations for the proper psychological, physical, and social development of the child;
- reduce the incidence of mortality, morbidity, malnutrition and school drop-out;
- achieve effective coordination of policy and implementation among the various departments promoting child development; and
- enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

Beneficiaries

The beneficiaries in ICDS are children below 6 years, pregnant and lactating women, and women in the age group 15–44 years.

Services

ICDS provides a package of services to the beneficiaries. Following components of NUTRITION, HEALTH and EDUCATION form the ICDS package of services.

- Supplementary nutrition
- Immunization
- Health check-up
- Treatment of minor illness
- Referral services
- Nutrition and health education
- Non-formal pre-school education to children in the age group of 3–6 years.
- Convergence of other supportive services like safe drinking water supply, sanitation, functional literacy for adult women etc.

Supplementary nutrition is provided to children under six years and to pregnant and nursing mothers from economically weaker families. Children under six years with moderate undernutrition are the prime beneficiary for supplementary nutrition. It was planned to select the moderately malnourished children on the basis of their upper mid-arm circumference or weight for age. However, it had been difficult to practice this approach and all preschool children who attend ICDS village centres (Anganwadi Centres) receive supplementary nutrition, which is given for 300 days of the year. In cases of severe malnutrition, an appropriate quantity of suitable therapeutic food is provided (the average cost of food/beneficiary is reviewed periodically). Food is prepared on the spot for feeding. Children also receive vitamin A and iron and folic acid tablets. Pregnant and lactating women receive the supplementary nutrition and Iron-folic acid tablets.

Health services include ante-natal care of pregnant women, post-natal care of nursing mothers, and primary health care of children under six years of age. The children are examined and weighed periodically. Immunization against six killer diseases of the childhood vis., diphtheria, tetanus, whooping cough, tuberculosis, measles and polio is given to all the children below 2 years of age. Immunization against tetanus is given to all the pregnant women. Children receive treatment for diarrhoea (oral rehydration), dysentery, worm infestation and other minor ailments at ICDS village centre (AWC).

Referral services are to be provided for both mothers as well as children. Children and high risk mothers requiring referral services are sent to SHC, PHC, district hospitals, and referral hospitals.

Nutrition and health education is given to all the women between the age of 15 and 45 years, with priority to pregnant women and nursing mothers. A special follow-up of mothers is done whose children suffer either from malnutrition or morbidity. Health

and nutrition education is imparted through special campaigns, cooking and feeding demonstrations, and home visits by anganwadi workers.

Nonformal pre-school education is imparted to children of 3-6 years in an Anganwadi in each village or locality. The intention is not to impart formal learning but to develop in the child desirable attitudes, values, and behaviour patterns and to provide the child with psycho-social stimulation.

Selection of Project Areas

In the selection of projects in *rural* areas, priority is given to the following factors

- areas predominantly inhabited by tribes,
- backward areas;
- drought prone areas;
- areas inhabited predominantly by scheduled castes;
- nutritionally deficient areas; and
- areas poor in development of social services.

In the selection of wards in *urban* areas for urban projects, location of slums, and areas predominantly inhabited by scheduled castes, are accorded priority consideration.

Organisation for ICDS implementation

The administrative unit for the location of an ICDS Project is a community development block in the rural areas, a tribal development block in the tribal areas, and a group of slums in urban areas.

An 'Anganwadi' is the focal point for the delivery of the services to children and mothers at their doorsteps. An Anganwadi normally covers a population of 1,000 in both rural and urban areas and 700 in tribal areas. The number of anganwadis in any project can be increased according to local needs on the basis of population, topography, number of villages, etc.

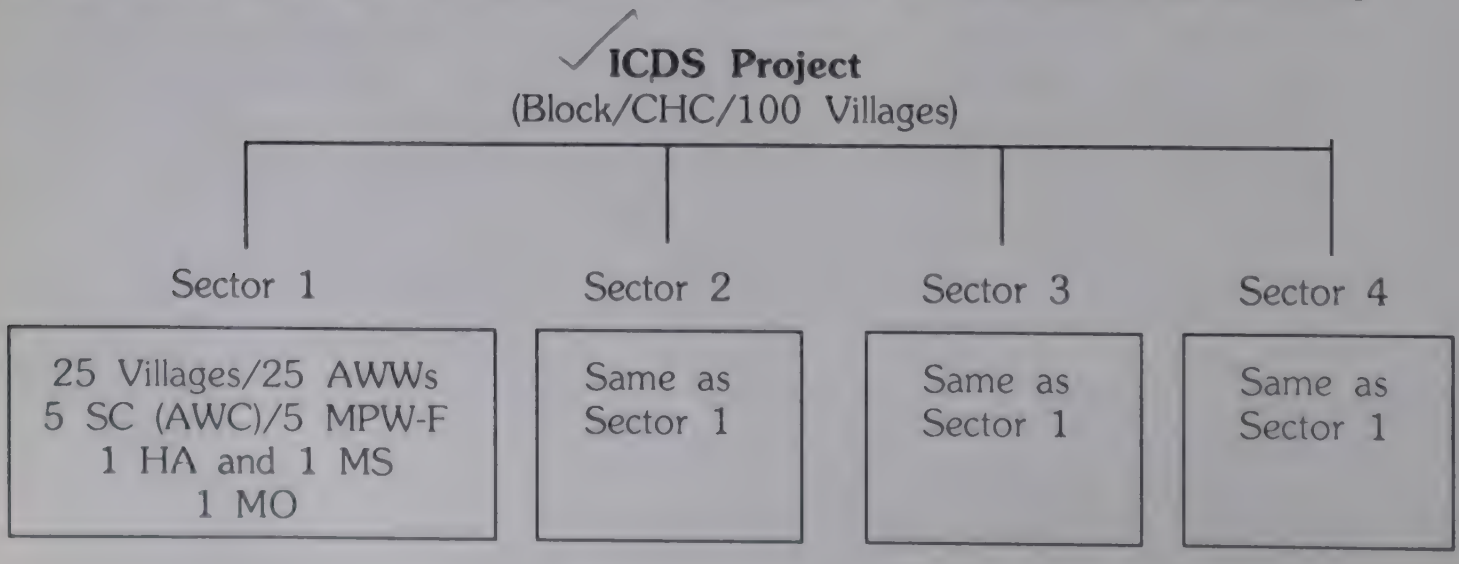
Services at the Anganwadi are delivered by an Anganwadi Worker. The Anganwadi Worker, is a local woman selected from within the community. She is part-time honorary worker and receives an honorarium. She is assisted by a helper who is also a local woman and is also paid a small honorarium. AWW is responsible for :

- Organising non-formal, pre-school education in the Anganwadi for children 3-6 years of age;
- Organising supplementary nutrition feeding for children under six, pregnant women, and nursing mothers;
- giving health and nutrition education to mothers;

- making home visits for education of parents, particularly, mothers,
- eliciting community support and participation in running the programme,
- assisting the Primary Health Centre staff in the implementation of the health component of ICDS Programme,
- maintaining liaison with other institutions in the village and with other village functionaries, and
- maintaining records on the village survey and submitting monthly progress reports

The work of Anganwadi Workers is supervised by full time worker, the Mukhya Sevikas. Mukhya Sevikas are appointed at the proportion of one for 25, 20 and 17 anganwadis in urban, rural, and tribal projects respectively. Her duties include guidance to Anganwadi Workers in household surveys, assuring adequate coverage of target groups, use of weighing scales and arm bands, conducting home visits, the maintenance of records, monitoring immunization coverage and other important support. She acts as a liaison between both the anganwadi workers and the primary health centre staff, which delivers the basic health services of the ICDS Programme, and between the anganwadi workers and the Child Development Project Officer (CDPO) who is in charge of each ICDS project. The CDPO supervises and guides the entire project team, including the mukhya sevikas and anganwadi workers, conducts field visits and organises staff meetings for review of progress.

The infrastructure of the health services is important component for implementation of ICDS. Medical Officer Incharge of old PHC (New CHC) corresponds to CDPO and is over all incharge of the health components of ICDS. In the health infrastructure, we have 3-4 Medical Officers in each old PHC (Block) area with about 100 villages in rural set up. One Medical Officer takes charge of one sector each constituted by 20-25 villages (equivalent to new PHC). One Health Assistant (HA) corresponding to the MS looks after ICDS work in 20-25 AWC. There are 4-5 Female multipurpose worker (MPW-F) under each HA in a sector. Each MPW-F is responsible to supevise the work of 5-6 AWCs. The whole organisational structure can be depicted as following :



ICDS is a multi-departmental and inter-sectoral programme. The coordination machinery has been set up at all the levels of managment. CDPO and MO under supervision of district authorities coordinate the ICDS implementation at the block level. The Deputy Commissioner or Collector is responsible for coordinating the implementation of the Scheme at the District level. Districts having five or more ICDS projects, have ICDS monitoring cells. These cells include an ICDS Programme Officer, a Statistical Assistant, an Office Supervisor, an Upper Division Clerk, a driver and a peon. Districts with 80 per cent coverage also have a nutritionist, a pre-school instructor, a social work instructor, a health education instructor, an accountant, and a typist. At the State level, the Secretary of the Department of Social Welfare or any other nodal department designated by the State Government, is responsible for the implementation of the Programme. Special ICDS cells have been set up at the State headquarters to monitor the programme at the state level. At the centre level, the Department of Women and Child Development of the Ministry of Human Resource Development is nodal department for the implementation of this programme.

Central Technical Committee of ICDS (for Health & Nutrition)

The Department of Social Welfare, Government of India, appointed the Central Technical Committee (CTC) on Health and Nutrition at the All India Institute of Medical Sciences (AIIMS) in 1976. Members of the CTC included representatives from Ministry of Health, Planning Commission, Social Welfare, National Institute of Public Cooperation and Child Development (NIPCCD) with Prof. B.N. Tandon (Head of the Deptt. of Gastroenterology & Human Nutrition, AIIMS) as its Chairman. The list of members is given at the end of the Chapter. In the year 1988, the Ministry of Human Resource Development, the Deptt. of Women & Child Development, reconstituted the CTC by including a few more members. Members of the reconstituted CTC are given at the end of the chapter. CTC established a Central Cell at AIIMS, New Delhi to carry out the following functions :

Functions of the CTC

- To organise training in the field of health and nutrition for health and non-health workers of ICDS.
- To carry out survey, evaluation and research for obtaining objective data about the performance of ICDS.
- To provide technical assistance to the states to monitor health and nutrition components and continuing education activities of ICDS.
- At the block level, the senior-most Medical Officer or the Medical Officer-in-Charge of the PHC is designated as ICDS **Project Adviser** (PA). Other Medical Officers of the PHC are designated as **Sectoral Advisers** (SA).
- Faculty of Preventive and Social Medicine, Dept. of Paediatrics and Deptt. of Obstetrics and Gynaecology have been designated as **ICDS Consultants.**

Establishment of honorary functionaries.

CTC has developed a unique system of honorary functionaries as detailed above. It has involved the academic community of the medical colleges and staff of health department in the country in this national programme. The basic approach to the involvement of all the above functionaries has been voluntary and honorary. It is important to state that the academic community has been involved for the first time in an programme of national importance. CTC established a unique system of honorary functionaries at various levels as follows to carry out its functions :

- At the State level, Director of Health Services has been designated as **State Coordinator,** ICDS.
- Senior official of the Directorate of Health Services has been designated as **Senior Advisor,** ICDS.

- An Officer in the Health Statistics/Information Department of Directorate of Health Services has been identified and designated as **Officer-in-Charge of Data Analysis Cell** (ODA)

- At the district level, the Chief Medical Officer of Health (CMOH) has been designated as **Chief District Adviser** (CDA).

- Dy. Chief Medical Officer or allied Officers of the district is designated as **District Adviser** (DA).

Activities of CTC :

The activities of the Central Technical Committee, can be summarised as following:

- Training
- Monitoring and Continued Education
- Survey and Research

Training

A systematic approach to training/orientation was introduced in 1976 with the assistance of academicians from the medical colleges of the country, in order to improve the work efficiency of ICDS functionaries. Training system has been modified according to the needs of the programme objectives. Finally, since 1989 an Integrated Training programme as discussed in the following paragraphs has been established.

Over the years a number of national programmes have been initiated for mother and child health development in the country. These programmes include. MCH and F.W., Universal Immunisation, Diarrhoeal Diseases Control, Integrated Child Development Services, Acute Respiratory Infections Control, Safe Water Supply and Environmental Sanitation *etc.* which were started in different periods of time and are being continued in the successive Five year plan periods. Each programme has its own vertical approach for training of medical officers and para-medical personnel. It was felt that such a training tends to have fragmented approach whereas various services under these programmes have been integrated at the peripheral level and are being delivered as a part of comprehensive health care and developmental services. It was therefore, decided that the training for all the programmes for mother and child development be integrated and that there should be joint training of various functionaries of health and ICDS at different levels. It was agreed by experts that integrated training will have following advantages:

- Will establish a culture of holistic approach for delivery of essential services to mother and children for their optimal growth.

- Will develop better interpersonal relationship and better understanding of each other's role and difficulties.
- Will develop a team spirit for the delivery of services.
- Will be time saving and cost effective as the trainees will not be called several times to the same venue.

The need for integrated training programme was stressed in various technical and administrative forums for more than five years. The Chairman, Central Technical Committee on Health & Nutrition, AIIMS, New Delhi, took up the matter with the senior officers of the women and Child Development Department of Ministry of Human Resource Development as well as the Ministry of Health & F.W. The CTC prepared the course curriculum for the different level functionaries with the assistance of a group of experts drawn from the Ministry of Health & F.W., National Institute of Communicable Diseases, New Delhi, Rural Health & training Centre, Najafgarh and Municipal Corporation of Delhi. The CTC took up the integrated training of district immunisation officers of UIP districts and corresponding District Programme Officers of ICDS in the four states of M.P., Orissa, Rajasthan and U.P. during the year 1988-89 and 135 officers received the training. In the meanwhile CTC prepared a manual containing the important aspects of UIP, DDC, MCH, ICDS and ARI with assistance of a group of experts and circulated to all the participants.

The Department of Women & Child Development Department and the CTC decided to operationalise the integrated training programme for the medical officers and the child development project officers all over the country during the year 1989-90. The 102 ICDS consultants, who are the senior faculty members in the disciplines of Paediatrics or Preventive and Social Medicine or Obstetrics & Gynaecology of different medical colleges, decided to replace the ongoing orientation and training programme of medical officers by integrated training covering all the national programmes for mother and child development. The Department of Women & Child Development Department of the Ministry of HRD addressed to Nodal Department of ICDS of all state/UT Government to depute the CDPOs as and when the ICDS consultants organise the training courses for medical officers. Necessary guidelines and programme schedule were developed the Central Cell of the CTC and circulated to all consultants for standardisation of the training programme. The consultants were given the freedom to adopt innovative approaches to improve the quality of training programme and to make it cost effective. Senior officers of the Central Cell participated in several training courses as resource persons. During the year 1989-90, 198 courses were organised and 5095 persons consisting of Medical Officers, CDPOs other functionaries of Health & ICDS also received the training. The consultants at the regional meetings held at Delhi, Guwahati and Madras during the months October-November, 1989 reviewed amongst other things, various aspects of the integrated training programme. They suggested various strategies to meet the local needs and to make the integrated training programme more successful. Pre and post course evaluation indicated that this training approach has been beneficial

to all the participants. it is planned to continue the integrated training programme during 1990-91. The duration of training/orientation course at present is for 5 days. However, short duration courses are also arranged, if the medical officers cannot be deputed for full 5 days. Over 70% of Medical Officers have already been trained.

The yearwise breakup of the number of Consultants, number of courses, as well as functionaries trained since 1982-83 is given in the Table.

Table : Orientation and Training Courses of Advisers, MOs and Others

Period	No. of Consultants	No. of Courses	No. oriented		
			Adv	MOs	Others
1982-83	45	103	174	1163	-
1983-84	58	170	159	1866	298
1984-85	113	139	77	1886	480
1985-86	115	139	132	1860	343
1986-87	109	123	90	1480	445
1987-88	99	187	254	2180	339
1988-89	103	143	143	1673	1247
1989-90	102	198	123	2777	2195*

* includes 700 CDPOs

Monitoring

Monitoring the health components of ICDS is done by the state Deptt. of Health and Family Welfare. However, CTC provides the state health authorities technical assistance in respect of computerising the data on essential parameters of health and nutrition components of ICDS, for timely and appropriate action as well as feed back to different levels of concerned health and social level functionaries.

The monitoring system has emphasis on the functional monitoring and continuing education of the functionaries. Each project has been divided into 4-5 sectors. Each sector is monitored by one medical officer designated as Sectoral Adviser (SA). The monthly report from 20 - 25 AWs of each sector is received by the SA. The SA reviews the implementation of ICDS activities in the AWs allocated to him along with ANMs, MPHW(F), HA and MS. The Sectoral Adviser takes a continuing education session of the functionaries in the sector every month. The Sectoral Adviser submits the reports to the MO Incharge PHC. The MO incharge PHC, known as Project Adviser (PA), consolidates the reports of all the AWs in his PHC area, received through Sectoral Advisers and sends the monthly report to the Central Cell, Chief District Adviser and the State Co-ordinator after its discussion at the monthly meeting at the PHC (or new

CHC). The reports of Project Advisers from all over the country are received within 20 days of the end of month by the Central Cell.

In each district, a second level health officer is designated as District Adviser (DA). The DA conducts the PHC level monthly meeting of the projects allotted to him. He reviews the PAs report and takes a continuing education session for MOs, LHVs, CDPOs, MSs and other participants at the PHC meeting. The DA sends the monthly report to the Central Cell and State Coordinator.

In each district, the Head of the Medical and Health Services is designated as Chief District Adviser (CDA). Each CDA conducts the District Level meeting in which the District Advisers, Project Advisers, CDPOs, District Social Welfare Officers of ICDS participate. The participants review the progress of ICDS comments of the CTC and generate local action. The CDA sends the monthly report to CTC.

The Central Cell of the ICDS at All India Institute of Medical Sciences, New Delhi, consolidates all the monthly reports received from PAs, DAs, and CDAs projectwise, districtwise and statewise for the whole country. The computerised output is analysed and essential components are tabulated for attention and necessary action by the Chief District Advisers. The monthly monitoring data is sent to the Ministry of Human Resource Development (Department of Women and Child Development) at the Centre and the Departments of Health and Family Welfare and the concerned nodal departments at the State level for their information and follow up actions within 45 days.

At the State level, the Head of the Health establishment or another senior officer acts as the State Coordinator. He alongwith the Senior Adviser (a distinguished scientist/administrator of medical profession) coordinates the ICDS activities. The State quarterly meetings are organised every quarter with State Coordinator in the Chair and participation of Chief District Advisers, representatives of the social Welfare Department of the State and Central Cell. Feedback compiled at the central Cell in the previous three months are reviewed. Specific problems are identified and remedial measures are outlined. The officials of the respective Ministries are requested for necessary joint follow-up action.

Feedback through monitoring generates action at each step. Within 3 days of closing of the month, Medical Officer who is incharge of sector (SA for 20 - 25 villages) suggest solutions to the problems presented by Anganwadi Workers. The second action is generated at the Primary Health Centre within 10 days of the end of the month by the District Adviser of ICDS and Project Adviser of the ICDS Medical Officer-in-Charge, Primary Health Centre at the monthly conference of the advisers and CDPOs, Health Assistants and M.S. to review the sector and project report. Chief District Advisers identify specific problems and take necessary actions within 30 days of the end of the month to ensure successful implementation of ICDS in all the projects of the district.

Continuing Education

Continuing education of various levels of functionaries is one of the important ongoing activity of the Integrated Child Development Services Scheme. It helps to update

the knowledge and skills of the workers and offers an opportunity to motivate them for better performance. There are three levels of continuing education exercises in each ICDS project. The district level continuing education is undertaken by the Chief District Adviser, the PHC level is the responsibility of the District Adviser and at the front line at the sectoral headquarter village, it is the provided by the sector adviser medical officer.

The participants at the district level are the DA, CDPO, and PA; at the PHC we have PA, SA and CDPO and at the sector they are AWW, MPW, HA and MS. Continuing education at each level is the part of the monthly monitoring conference. The topics for discussion in continued education are listed as follows:

Suggested topics for continuing education

Sectoral Level

- Objectives and goals of ICDS
- Organisation and administrative set up in ICDS project.
- Enlistment of beneficiaries
- Health check-up.
- Health and Nutrition Components of ICDS
- Health staff in ICDS project and their co-ordination
- Antenatal check-up and care of pregnant women
- High-risk approach
- Intra-natal care and child birth
- Breast feeding - the advantages
- Monitoring of the child's nutritional status using weight, mid upper arm circumference and growth charts
- Immunization schedule for children and pregnant women.
- Acute respiratory infection and measures for control th n at PHC level.
- Diarrhoea and Oral Rehydration Therapy
- Medicine kits with Anganwadi Workers and treatment of minor ailments
- Weaning foods
- Nutritional deficiencies—Anaemia, vitamin A deficiency, Goitre, Protein Energy Malnutrition

- Nutrition and Health Education
- Supplementary Nutrition for children, pregnant women and lactating mothers
- Therapeutic Nutrition for severely malnourished children
- Early detection and prevention of childhood disabilities
- Drinking water and environmental sanitation
- Assessment of the health and nutrition status through monitoring reports
- Infant and Toddler mortality
- Home visits and their importance

PHC Level

In addition to above topics, the following are suggested topics for the District Adviser-

- Method of reviewing Monitoring at sectoral level
- Growth and development of children
- Immunization schedule-Importance of cold chain, proper enlistment of beneficiaries and immunization activities, reporting under U.I.P.
- Health check-up, referral system from AW centre onwards
- Inter-sectoral coordination between departments/agencies
- Community involvement in ICDS
- Continuing Education, its need and importance
- Field visits and their importance
- Mothercraft
- Health programmes implemented through PHC.
- Supportive supervision of AWW by health workers

District Level

In addition to the topics suggested for sectoral and PHC level meeting for continuing education, the following are other topics with emphasis on the administration and management which may be included at the district level-

- Co-ordination with social welfare or nodal department functionaries
- Orientation and training courses for Medical Officers, their need and importance

- Mechanics of release of supplies, grants, vaccines *etc.*
- Inter-sectoral and inter-departmental co-ordination of ICDS with MCH, U.I.P and family welfare departments and other agencies.
- Assistance to consultants for survey and evaluation studies.
- Discussions on data from evaluation/research studies
- Review of monthly monitoring reports specially feedback from Central Technical Committee.
- Discussion on decisions and proceedings of state quarterly/and divisional meetings.
- Any specific health and nutrition problems in ICDS projects of the district
- Role of district level seminars
- Role of community participation.

Evaluation and Research

The ICDS—Integrated Child Development Services Scheme in India was launched on October 2, 1975. Almost at its outset in 1975 it was decided that the academic community of the medical colleges of India would constitute its "external investigator" component for evaluation and research. In this endeavour as many as 29 senior faculty members from 27 medical colleges, located within a reasonable distance to 33 experimental ICDS projects, unanimously resolved at a meeting held at the All India Institute of Medical Sciences (AIIMS), New Delhi in November 1975, to act as its honorary consultants with twin roles of (i) evaluation and research; and (ii) orientation as well as training of the functionaries.

These consultants agreed to work under the overall guidance of the Central Technical Committee (CTC) of ICDS, located at the AIIMS. The group unanimously laid following guidelines to achieve various goals of ICDS: (a) the evaluation and research methodology should be developed and this should be updated from time-to-time through meetings of the consultants and academic staff of the CTC; (b) the evaluation and research should involve minimum possible resources with active participation of the postgraduate students and faculty members belonging to the respective departments of the ICDS consultants; (c) the collation of data and its first stage tabulation should carefully be done by the research teams of the consultants; (d) the consistency checks and the final tabulation of data should, however, be undertaken by the Biostatistics Cell of the CTC; (e) the consultants may freely communicate the findings of their ICDS studies in appropriate journals; (f) the national data, as a matter of policy, would invariably be published by the CTC with due acknowledgement to the consultant's work or their inclusion as co-authors as the case may be; and (g) evaluation and research data generated by the consultants will be used mainly for three purposes, viz., (i) to know the coverage and

impact of ICDS services in health and nutrition sector; (ii) for planning the expansion of ICDS; and (iii) to disseminate globally the results of Indian experiments of ICDS.

The contribution by the consultants proved to be highly cost-effective. The number of consultants increased periodically, with the expansion of ICDS. In fact progressive increase was observed during 13 years' period in reference to the number of projects from initial 33 to 1952 in 1988-89.

Evaluation and Research Approaches:

Following two approaches have been adopted.

- Multi-centre projects initiated by the CTC include annual surveys, infant and early childhood mortality studies and special research investigations
- Individual research projects by the consultants, usually as operational project for post-doctoral thesis work.

The annual survey and research studies by the consultants provided data on the coverage of the beneficiaries by the ICDS services such as supplementary nutrition, immunization and primary health care and its impact on the health and nutritional status of the beneficiaries. However, the multi-centre special studies generated data related to the specific objectives of the studies.

Annual Surveys

Annual surveys on health and nutrition parameters have been conducted through an external evaluation system by teams led by senior faculty members of the departments of community medicine and paediatrics of various medical colleges in the country.

The Central Bio-Statistics Cell at AIIMS with the advice of consultants and the CTC of ICDS on Health and Nutrition has been developing necessary details for annual surveys. Uniform sampling procedure and survey techniques have been adopted. The survey cards and dummy tabulation sets alongwith the detailed guidelines for data collection and tabulation analysis have been provided by the Central Bio-Statistics Cell. The design and mechanism of survey including sampling, methodology, formats, organisation of field work and the process of data analysis has been accordingly modified with the expansion of the programme. This evaluation process through annual surveys is reviewed by the consultants at brain storming sessions of Regional Meetings and Annual National Convention.

From 1976 to 1987 as many as 627 annual surveys (baseline and follow-up) have been carried out by the consultants.

Research by Doctoral Students

The M.D. Theses Work of Integrated Child Development Services :

The research studies by the students registered for their doctorate in Community Medicine and Paediatrics have been a unique feature of this nationwide programme. M.D. students have to submit a research thesis as part of their doctorate programme. The CTC has not contributed funds for this activity. However, the consultants of ICDS themselves have alloted the subjects to their postgraduate students for their MD theses.

A total of 108 theses have been written on ICDS subjects at different medical colleges of the country till early 1989. These research studies, according to the rules of Academic Institutions were planned and carried out by the doctoral students under supervision and guidance of the senior faculty members of the department. No financial assistance was provided from ICDS budget for these studies. Data of these research studies have been presented in the different sections of the results.

Presentation of Data of Evaluation and Research Studies:

Enormous data have been collected through 627 surveys, 108 research theses and more than 12 special research projects. It has been organized on rational and scientific basis, so as to provide clear message and sound conclusions.

Results and Comments:

Antenatal Services

The evaluation and research studies on antenatal services show convincingly that the coverage of pregnant women has significantly improved in operational ICDS projects which are of 3 years or longer duration. Since the coverage remains on an average about 50 per cent, more team efforts of ICDS and Health Services staff were called for to cover almost all the pregnant women. Rural group with a comparatively lower coverage than the urban needs more attention.

Comparative study of ICDS and matched control non-ICDS pregnant women is quite revealing. Though the sample size is small, conclusions are almost similar as that of like the other ICDS studies, annual surveys and doctoral student research investigations.

Coverage of pregnant women by antenatal services is almost double in ICDS group (71.9%) as compared to control group (40.3%)

The antenatal services coverage as revealed by this study in control group is significantly lower from those as observed in operational ICDS projects by annual surveys and doctoral thesis research.

The home delivery continues uniformly as the favoured practice in both ICDS as well as non-ICDS groups. However, significantly high proportion of ICDS projects pregnant women utilise trained paramedical personnal for home delivery (76.3%) as compared to non-ICDS project group (49.4%). It is obvious that ICDS is stimulating the utilisation of trained paramedical personnel for intranatal services for pregnant women. This trend needs to be provided a momentum so that almost all the pregnant women are delivered by the trained personnel at the village level itself, even at their own houses.

Postnatal Services

Data on postnatal services to the lactating women show that all services in ICDS group have better coverage than the control and the baseline data. However, it is evident that the overall success rate remains less than 50 per cent in rural and 30 to 40 per cent in tribal women. These results, though satisfactory, call for augmentation of ICDS and health staff activity to achieve much more success in future. Postnatal services coverage will definitely have a positive impact on population control programme.

Immunization coverages

Evaluation through different approaches estimates the significant contribution of ICDS to increase the immunization coverage for BCG, DPT, polio and tetanus in all three types of population viz., rural, tribal and urban. The immunization by 3 vaccines for children reached to nearly 50 per cent by 1985 compared to the baseline of less than 21 per cent. Similarly, TT immunization for pregnant women showed more than 5-fold increases.

All the studies comparing immunization coverage in ICDS operational projects with the baseline control population confirmed a very significant increase in the immunization rate for children below 6 years age, below 2 years age and the pregnant women in the ICDS group. The increase though significant was of variable degree for different vaccines. Research studies revealed higher success rate of immunization programme than the annual surveys.

Comparative study of immunization in ICDS and matched control non-ICDS group of children was done as special research project. It corroborated the conclusions of earlier evaluation through annual surveys and doctoral students' theses work. There was very significant increase of the coverage by all the 3 vaccines in 0-3 and 0-6 years age group children of ICDS project compared to the matched control non-ICDS group.

ICDS approach is successful for enhancing immunization coverage and thus continues to contribute significantly in achieving the goals of Universal Immunisation. It is expected that with proper coordination between ICDS and health functionaries we could complete our targets of immunization much earlier than the year 2000 AD. High cost UIP surveillance studies have also confirmed a very good immunization coverage in ICDS projects.

Nutritional Services Coverage

Nutrition intervention by supplementary food to prevent and improve the state of undernutrition, iron and folic acid to control nutritional anaemia and vitamin A to prevent blindness due to xerophthalmia, is a major component of ICDS programme. Despite several difficulties inherent in implementing nutrition intervention programme in remote rural and tribal villages at the doorsteps of underprivileged population, data of survey and research studies presented in this section establishes the utility of ICDS in improving the coverage of preschool children by nutritional services. Coverage of urban children by ICDS is better than the rural and tribal children. This is simply because of the difficulties in maintaining the uninterrupted supply of supplementary food, iron and folic acid and vitamin A to the remote villages. Further, older children of 3 to 6 years show much better coverage than younger children below 3 years. Participation of infants and very young, below 3 years age children in a spot feeding programme even in their own villages is rather difficult. Mother or elder sibling is expected to bring the younger children to the anganwadi worker. This is often not possible daily. Some alternative strategy to improve the coverage of below 3 years age children by nutritional services has to be evolved and tried in pilot experiments. Management of quality of food and its uninterrupted supply to anganwadis of remote village also needs strengthening to ensure further improvement in nutritional services in ICDS.

Nutritional status of preschool children:

Various approaches adopted to assess the impact of ICDS on nutritional status of 0-3 and 0-6 years old children confirm a decline in moderate and severe undernutrition and increase in the proportion of children with normal or grade-I undernutrition.

The longitudinal study showed that severe undernutrition amongst the preschool children in the population where ICDS was started as pilot project in 1975, had declined from 19.1 to 6.3 per cent in 8 years follow up study. Corresponding decline for moderate undernutrition was from 27.0 to 19.7 per cent. Further, in a very large pooled sample of preschool age children, in the population where ICDS projects were established for 3 - 5 years, the prevalence rate for severe and moderate undernutrition was noted to be 6.4 and 18.1 per cent respectively. The research study by doctoral student recorded severe and moderate undernutrition in 9.1 and 25.1 per cent preschool age children respectively. A comparative research study for undernutrition in ICDS and non-ICDS matched control samples showed severe undernutrition in 6.5 per cent and moderate undernutrition in 22.3 per cent of preschool age children. All these figures tend to confirm a considerable decline of severe and moderate malnutrition in ICDS projects.

The impact of ICDS on nutritional status of younger children between 0 - 3 years age group was also positive. Moderate and severe malnutrition together was recorded in 30.6 per cent of the children in ICDS projects as compared to 38.5 per cent in the matched control (non-ICDS) group. Severe malnutrition in 0-3 years age group was

higher as compared to 0 - 6 years age group which points that ICDS nutrition services are not reaching to younger children to the same extent as they are being provided to the older children. Improvement in the nutrition coverage of younger children by strengthening the current management and developing the alternate models is strongly recommended.

Special Research Studies:

Study of morbidity during infancy and early childhood leads to the following conclusions:

ICDS village level infrastructure with proper linkage and supervision of health staff of the Primary Health Centre can be successfully utilised to record morbidity and disease-specific mortality of the infants and young children.. These observations can be very useful to strengthen the primary health care for preschool age children and achieving the goals of child survival and child development. Monitoring of the coverage of the beneficiaries by the services of the programmes is simpler than the assessment of the impact. Present study suggests that the impact of ICDS or any other similar programme on morbidity of young children can be monitored by the village level worker.

Epidemiology of illness in rural and urban slum setting is different as is revealed by the present study. Crowding and air pollution contribute significantly to acute respiratory infections which forms the major cause of morbidity in urban slums. Personal, environmental, food and water hygiene influence the high prevalence of diarrhoea in rural setting. Diarrhoea and respiratory infection call for maximum attention in ICDS projects.

High annual frequency of illness per child per year and seasonal variations in the morbidity pattern noted in the results of this study deserve consideration in planning and operation of preventive and curative actions by the medical officers and the paramedical staff. A rational approach to the strategy of medical care will be cost-effective.

National Institute of Public Cooperation and Child Development

The National Institute of Public Cooperation and Child Development (NIPCCD) is an autonomous organisation under the administrative jurisdiction of the Department of Women and Child Development of the Ministry of Human Resource Development. It was sponsored by the planning Commission and registered on 28 February 1966 under the Societies Registration Act of 1860. The Institute has three Regional Centres located at Guwahati, Bangalore and Lucknow. The State/UTs covered by the three Centres are given below:

• Regional Centres, Guwahati (established in 1978)	North-Eastern States of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and UTs of Andaman and Nicobar Islands
• Regional Centre, Bangalore (established in 1980)	Andhra Pradesh, Karnataka, Tamil Nadu and UTs of Pondicherry and Lakshadweep
• Regional Centre, Lucknow (established in 1982)	Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Rajasthan and Uttar Pradesh

The central focus of the Institute is the integrated development of the child and the mother in its most comprehensive form.

Objects

The objects of the Institute are:

- to develop and promote voluntary action in social develpment;
- to take a comprehensive view of child development and promote programmes in pursuance of the National Policy for Children,
- to develop measures for coordination of governmental and voluntary action in social development; and
- to evolve framework and perspective for organising childrens programmes through governmental and voluntary efforts.

Functions

The main functions of the Institute are:

- research and evaluation studies in public cooperation and child development;

- training of government and voluntary sector personnel engaged in social development, child development and allied activities;
- Dissemination of information pertaining to child development and public cooperation through documentation and publications;
- technical advice and consultancy to Central and State Governments and other agencies in promotion and implementation of policies and programmes for child development and voluntary action; and
- liaison with international and regional agencies, research institutions, universities and technical bodies engaged in activities similar to those of Institute.

Programmes and Activities of Different Divisions

The central focus of the Institute is the integrated development of the child and the mother in its most comprehensive and varied form. The activities of the Institute are carried out through six Divisions, each (except Women's Development) headed by a Joint Director:

- Public Cooperation
- Child Development
- Training
- Monitoring and Evaluation
- Women's Development
- Common Services and Resource Centre on Children

Public Cooperation Division

The present thrust of the Division is on the promotion of community consciousness, voluntary action and people's participation in programmes aimed at integrated development of the child and the mother. Its areas of special interest are social action and community participation, care of children of weaker sections, management of voluntary action and community participation and social policy and social legislation. It undertakes research and conducts orientation courses for officials and non-officials working in government departments and voluntary agencies. It also organises national seminars/ workshops in these areas.

Child Development Division

The division functions as a policy arm of the Government in matters pertaining to the development/welfare of the child and the mother. It undertakes research studies and tries to build data base through its own research and documentation, and interaction with specialised institutions. It also organises orientation courses and seminars/ workshops for officials and non-officials working in the field of child development. It promotes the concept of 'holistic' development of the child.

To strengthen its research and training programmes and provide practical experience to trainees and the faculty of the Institute, two Field Demonstration Services namely, Child Care Centre and Child Guidance Clinic are being run. The two units also provide services to the neighbouring community on a moderate scale.

Training Division

The Division is entrusted with the planning, coordination and monitoring of the training of ICDS functionaries. Its responsibilities include building up training infrastructure and capabilities of institutions engaged in training of ICDS functionaries, preparation and revision of syllabi and preparation, procurement of training materials including audio-visual aids. The Division does not confine its tasks concerning to the training of ICDS functionaries alone. It provides support to the other divisions of the Institute, its Regional Centres and local level institutions in the area of training of personnel engaged in programmes for development of mother and child in general. The Programme Support Communication Unit of the Division provides support to training programmes through graphics/audio-visual aids.

Monitoring and Evaluation Division

The Divison was initially entrusted with the task of developing a comprehensive system of monitoring and evaluation of social components of the ICDS programme. The experience gained has helped in operationalising the process of integrating relevant monitoring strategies into the ICDS programme at the national level. The Division also undertakes varied evaluation studies on the ICDS programme. It functions in close collaboration with technical and academic institutions and builds up capabilities of such institutions in the area of monitoring and evaluation. The activities of the Division include developing a monitoring and evaluation system for other social development programmes.

The Statistical and Computer Units of the Division provide assistance and technical support to the faculty of the Institute in their research activities.

Women's Development Division

The Division was established in September 1986 as a professional body with a view to complementing national policies by providing training, research, documentation, clearing house, management services at the policy making level by facilitating the emergence of voluntary action and replicable models of organisation and by facilitating and initiating work on issues/themes related to women in development.

Since its inception the Division has been involved in a wide range of activities such as the formulation of the National Perspective Plan for Women 1988-2000 A.D. for which it functioned as the secretariat and provided data inputs, information, graphi-

cal and diagrammatic material and coordinated overall formulation including consultations at various levels. In the past three years it has initiated a process of sensitization for policy-makers, IAS officers, Police/judicial/correctional officers. It has also organised programmes to sensitize and enhance management capacities of NGOs and other development functionaries. Through its Clearing House for information on women and its programmes the Division has developed linkages with a large number of institutions working for the development of women.

Common Services Division

Supportive services to programme divisions at the Headquarters and the Regional Centres are provided by the Common Services Division. It is mainly concerned with financial, personnel management and house keeping functions of the institute. It also looks after grant-in-aid, coordination and monitoring of projects assisted by the Institute. The Division has a well-equipped Reprography and Publication Unit.

Resource Centre on Children

The Institute's Resource Centre on Children (RCC) previously known as Documentation and Information Centre (DIC), is a specialised information centre. It is engaged in identification, collection and documentation of information on children and women. The Centre also prepares abstracts of research studies and compiles data on children and women. It has a collection of more than 20,000 books and 15,000 unpublished documents. It subscribes to about 250 journals and 150 Newsletters. The Centre has acquired computer facility to integrate and disseminate information and establish a data base.

Training of ICDS functionaries—AWWs, Helpers, Supervisors, CDPOs and Trainers.

The implementation of the ICDS programmes is carried out by the AWWs, Supervisors, CDPOs, MOs of the PHCs besides other paramedical staff such as HA and MPW. Anganwadi Worker is the front line honorary part time worker. She is selected from the local community and has the major responsibility for the successful working of the ICDS projects. Training of AWW is important to develop the knowledge and skills for their job. The efficacy with which they can discharge their functions largely depends on the inputs invested in the training. The training of AWWs has been entrusted to institutions run by the state Govts, Professional institutions and voluntary organisations, especially Indian Council for Child Welfare (ICCW).

Training of Anganwadi Workers

NIPCCD has been identified as an Apex body for the training of ICDS functionaries. NIPCCD has a limited direct role in the training of AWWs. Ministry of Human Resource Development (formerly known as the Ministry of Social Welfare) along with the state Govts. concerned has major responsibility for managing AWW training system. A number of agencies are involved in the AWWs training. They are either funded or totally managed by the State Govts. or Voluntary organisations like Indian Council for Child Welfare (ICCW), Home Science Colleges, Schools of Social Sciences etc. These training institutions are broadly known as "Anganwadi Training Centres' (AWTCs). There are nearly 300 such AWTCs of which, about 182 of them are under the State Governments. Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal states have the largest net work of AWTCs managed by the State Governments.

Criteria for the selection of training institutions include the following.

- Expertise and experience to run training programes through faculty and adequate infrastructure facilities.
- Class room facilities with arrangements for the preparation of teaching aids at low-cost and projection facilities.
- Work-room for demonstration purposes, suitably equipped.
- Boarding and lodging facilities for not less than 25-30 trainees for each batch.

Important tasks of AWTCs

Each AWTC is expected to organise $3^1/_3$ job training courses in a year. Each course registers approximately 50 trainees.. They also provide refresher training courses of 2 weeks duration consisting of 11 working days, to the AWWs who have completed

at least 2 years of job after initial job training. AWTCs are also called upon to organise/ help in special drives/campaigns on issues related to community health and family welfare. In a given year they may organise 3 job training courses and 1 to 2 refresher courses or 2 job training courses and 5 or more refresher courses.

Job training courses for AWWs

AWWs comprise both the literates and semi-literates trainees. Therefore, separate syllabi has been prepared for training literate and semi-literate AWWs. Job training of AWWs is of 3 months (24 days per month) and consists of class room teaching/group discussion of 170 hours duration. Practical and field training are imparted for longer duration (i.e.) upto 246 hours. Total hours of job training under revised syllabus works out to 432 hours. The training has the following eight important components relating to ICDS, besides general orientation.

- Child development and non-formal pre school education. (PSE)
- Nutrition
- Health
- Population Education and Family Planning.
- Organisation and management.
- Community contact and communication,
- Parent and community education.
- Evaluation and examination.

Significant features of current syllabus

The syllabus for the job training of AWWs was revised (February, 1989) to make it directly relevant to their job responsiblilities and the tasks AWWs are required to perform in the field. The revised syllabus was approved by the Dept. of Women & Child Development, Ministry of Human Resource Development in June 1987. Significant features of the revised syllabus are:

- Job responsibilities of AWWs are grouped under different areas of work.
- Specific task the AWWs are required to do and the skills required to perform the tasks effectively are spelt out.
- Linkages between job responsibilities, tasks, and skills have been highlighted in the contents and design of the programme schedule.
- More time has been allocated to practical sessions to make training more skill oriented.

Reference: Organising job training of Anganwadi Workers-Guidelines for instructors (1989). NIPCCD, New Delhi.

Refresher courses for AWWs

In the early years of the ICDS programme, AWWs did not receive any refresher training, on a regular basis. A beginning was made in 1983-84 by arranging a 'one day' special reorientation programme for AWWs who had worked at least for 2 years. Refresher courses on PSE are organised in AWTCs for a period of one week for the benefit of AWWs.

Since 1985-86, AWTCs organise 11 day refresher course for AWWs, who have already worked for 2 years since initial job training. Detailed syllabus for the 11 days refresher course has been drawn to facilitate proper focus on the various aspects of delivery of services in ICDS.

More recently, attempts were made to improve the skills of AWWs by formulating refresher courses for them. The revised course is of 18 days duration providing 14 working days, and 84 working hours. The various components of the newly developed refresher course are:

- General orientation
- Non formal PS education
- Nutrition and Health education
- Management

Orientation Course for helpers

Each Aww is assisted by a 'helper' who is invariably be a female worker, belonging to the same village or local community. She must be well-versed in cooking and converting locally available food commodities into traditional preparations to provide supplementary nutrition. She must have a sense of cleanliness and sanitation to ensure and maintain these principles in the AW centre.

The orientation course planned for the helpers aims at developing the skills of the helpers primarily to help AWWs in health checkup weighing children and immunization etc. Cooking practices, kitchen gardening, personal hygiene and sanitation, cleanliness of children and the AWCs, conducting plays and recreational activities for very young children, promoting group activities, ensuring mothers participation receive proper attention in the orientation courses.

Duration of the orientation course for helpers is 8 days, out of which there will be not less than 6 working days, contributing to 36 working hours. The various

components for the training are:

- General orientation
- Health & Hygiene
- Nutrition
- Formal Pre-school education
- Community contact (Health and Nutrition education campaigns)
- Maintenance and arrangement of equipment, records

Training of Supervisors

Supervisor, designated as 'Mukhya Sevika' guides and helps the AWWs. They conduct regular field visits to help AWWs to establish and maintain contacts with the community. She liaises between AWWs and CDPOs, in order to ensure proper administration and implementation of the projects. They are also responsible for communicating messages on health and nutrition, and developing group activities.

Supervisors till 1981, were trained for ICDS at the six family and child welfare centres of Women and Child Development. With the rapid expansion of ICDS, NIPCCD was asked to include supervisors for its training responsibility. Middle level training centres (MLTC) were identified by NIPCCD, in each of the states for this purpose. Subsequently the administration of MLTCs has been taken over by state Governments. Currently 20 such centres have been set up (two each in Andhra Pradesh, Gujarat, karnataka, Madhya Pradesh, Rajasthan, and Maharashtra and one each in 8 states namely, Assam , Bihar, Haryana, Kerala, Orissa, Tamil Nadu, U.P. and West Bengal)

Tasks entrusted to MLTC :

- To organise job training and refresher courses for supervisors.
- To provide orientation training to the trainers of AWWs.
- To provide supervision and guidance to AWTCs.
- To prepare training programme materials.

Revised job training

Job training of supervisors had been revised in September, 1985. At present it consists of three phases with the total duration of 90 days (working days of 72). Total working hours will be 432. The break up of three phases of training are as follows:

	Phase I	Phase II	Phase III	Total
Duration of the course (days)	45	30	15	90
Total working days	36	24	12	72
Total working hours	216	144	72	432

Training Components

Twelve major components of the training programme for supervisors are as following :

- General orientation
- Need for early childhood services
- Orientation to ICDS
- Child development and preschool education
- Nutrition
- Health
- Population education
- Community participation and communication
- Parent and community education
- Supervision and record keeping
- Feed back and evaluation
- Preparation for field placement

Out of 216 hours of training, 82 hours are spent for practicals and field visits.

Refresher courses for Supervisors:

Six days refresher course is organised for supervisors and this provides them an opportunity to update their skills and knowledge about ICDS and related programmes. The refresher training is directed to bridge the gaps in job requirements.

Training of CDPOs

The first batch of CDPOs was trained at the Family and Child Welfare Training Centre at the Jamia Millia Islamia, New Delhi. With the rapid expansion of ICDS programmes, the responsibility of CDPO training has been shifted to NIPCCD. CDPOs training is arranged at NIPCCD headquarters and the regional centres at Lucknow and Bangalore.

The job training for CDPOs is of two months duration (i.e.) 44 working days. The training programme components include:

- General orientation
- Nutrition
- Health

- Child development and nonformal preschool education
- Community participation and education
- Organisation and management
- Field placements in project (ICDS).

Refresher courses are arranged for CDPOs at NIPCCD, New Delhi. The course is of two weeks duration. The contents of this course include the following subjects:

- Introductory session
- Review of ICDS projects, guidelines to ICDS scheme.
- Health components in ICDS-Review and moniotoring, joint training.
- Growth monitoring, Supplementary Nutrition, Nutrition and health Education.
- Home management of diarrhoeal diseases.
- Preschool education.
- Community participation.
- Planning and briefing for the observational visits to ICDS projects.
- Management and supervision.
- Group exercise, planning and presentation of education session for supervisors, AWWs, for circle and sectoral meetings.

Training of Trainers in ICDS

National Institute of Public Cooperation and Child Development, New Delhi, and two of its regional centres at Bangalore and Lucknow arrange training programmes for the trainers all the year round. It is the responsibility of concerned state Government departments to depute sufficient number of trainers to the training institutes. Based on the evaluation of various training programmes, feed back received during visits to ICDS project areas, and discussions held with state Government departments, the syllabus for training is revised and updated from time to time. MLTCs, which organise training programmes for supervisors of ICDS projects also arrange orientation training to trainers of AWWs. Instructors at the MLTCs generally arrange 2 weeks training of instructors of AWTCs. Retraining or refresher training for instructors are part of the training. The training of trainers is modified and duration is increased based on the feed back for their requirements.

Monitoring of Social Components in I.C.D.S.

The Ministry of Social Welfare, Government of India vide their order No. 6-19/82/TR dated 29th November, 1983, constituted a Central Technical Committee to monitor Social Components of ICDS. This committee is located at NIPCCD, and the tasks of the Committee are:

- to direct, guide and coordinate the monitoring and evaluation activities, through institutions of home and social sciences, in respect of social components like pre-school education, health and nutrition education and community participation in ICDS;

- to approve designs and final reports of multi-centre studies with common concepts, tools and analytical methods, for monitoring and evaluating the non-health social components of ICDS;

- to commission and approve special sub-studies relating to social components, including unanticipated 'outputs of ICDS;

- to guide additional supportive activities of institutions of home and social sciences for strengthening the non-health social components of ICDS; and

- to approve the budget for monitoring, evaluation and other supportive activities for the social components of ICDS.

The Central Technical Committee on social components in ICDS was set up in November 1983 to direct, guide, and coordinate these monitoring and evaluation activities. NIPCCD, through a series of consultative meetings, seminars, and workshops has developed a design and indicators for monitoring and strengthening the social components of ICDS (i.e. non-formal pre-school education, health and nutrition education and community participation). The institute prepared draft guidelines based on the preliminary designs and indicators suggested by the Central Technical Committee and its sub-committees. These describe in detail the involvement of the technical institutions and the design for the study. This was reviewed at a meeting of representatives from technical institutions, State Government/UT administrations dealing with ICDS, as well as of senior officials from the Department of Women's Welfare, UNICEF, and other specialists. After incorporating the suggestions and modifications made by the participants at the above meeting, the guidelines were finalized.

Objectives

The system of Monitoring and Evaluation of Social Components formulated by NIPCCD has the following main objectives of monitoring and evaluation must be examined at two levels, i.e. general, and specific levels.

- At the *general* level, the monitoring and evaluation of social components are carried out in two phases. In phase one, the design and indices of the social components (evolved with the help and cooperation of the technical institutions in the selected ICDS projects) are tested on an experimental basis. In phase two, based on the results of this preliminary exercise, attempts are made to modify the design and indicators and to replicate the system at the national level.

- The *specific* objects of the exercise are as follows:

  - to evolve a mechanism for studying the efficacy of the processes involved in the delivery of social components of ICDS
  - to identify the weaknesses and bottlenecks in the delivery of social services of ICDS to enable timely corrections in the delivery system
  - to measure the impact of specific social services on target groups and
  - to suggest suitable measures to improve the impact of specific services. Relevant parameters for each of the following components shall become the terms of referenc for defining these concepts.

Non-formal Pre-school Education

Non-Formal pre-school education relates to activities conducted in the Anganwadi to promote the all-round development of the child. The number of children enrolled at the Anganwadi and the time spent on non-formal educational skill development will provide the basis for monitoring and evaluation. The impact of the service is likely to be reflected in the regular periodic progress made by the child in physical, motor, cognitive, and social growth.

Health and Nutrition Education

The existence of the Anganwadi is instrumental in promoting the use of health and nutrition education and of other social services. The percentage of women in the age group of 15 - 45 covered by the Anganwadi programme, the frequency and quality of activities related to the messages on health and nutrition will be used as the basis for monitoring and evaluating this component. The impact, in the form of improved knowledge and attitudes, will be reflected in improved childcare practices of the mothers.

Community Participation

Since the care and development of the young child is the concern of the entire community, community participation, in the context of ICDS, will be measured in terms of active involvement of the local leaders, institutions, and organizations in providing support to the programme. The level of the local community involvement will be reflected in their contributions of land, buildings, food, fuel, labour, and cash to the project. The progressive involvement of the community will be reflected in increased mobilization and utilization of local resources and decreased dependency on govermental interventions.

Review meetings of Department of Women & Child Development

ICDS provides a package of services to the beneficiaries targetted under this project. To maintain quality of services at peak level, review meetings are held by the Department of Women & Child Development to review the performances of the programme with State Govt. Departments concerned. Monthly monitoring reports (MMR)/Quarterly progress reports (QPR) and the computerised data sheets of the CTC are utilised for discussing the strengths and weaknesses of the projects in the states individually. Besides the State Govt. representatives CTC officials also take part in the review meetings held in the Ministry. Instructions are issued from the Ministry to the state Govt. suggesting corrective measures. Some of the areas which have been effectivley tackled are:

- Joint participation by CDPOs/Health officials at the district level in programme implementation and coordination.
- Intimating the State Coordinators promptly about sanction of new ICDS projects to facilitate advance action on the part of State Govt. Departments for posting of staff.
- Strengthening joint training of ICDS functionaries.
- 'Streamlining input supplies (e.g. medicine kits, Vit, 'A' IFA)
- Efficient and regular delivery of supplementary nutrition.
- Pre-school education.

The Department felt urgent need to consider upward revision of the unit cost for various supplementary nutrition programmes. An Expert Committee was set up by the Department to review the various aspects of this problem in depth. The committee made valuable recommendations outlining the policy and revised upwards the unit cost for delivering supplementary nutrition for different target groups.

At the national level, the Dept. of Women & Child Development holds high level meetings to bring about qualitative improvement in implementing ICDS programme. The outcome of the deliberations related to improving qualitatively and quantitatively the joint training programmes adopting innovative approaches for improvements for the future besides ensuring ICDS as 'peoples programme' instead of implementing the same as Govt. sponsored programme, and stressing the importance of community's involvement and participation.

Review meetings between Department of Women & Child Development and CTC has also helped in formulating a new system of financial management of work-related payments to CDAs/PAs, due to introduction of computer facility.

The National and State Conventions of ICDS

ICDS has introduced an approach of a State Level Convention and Annual National Convention. These conventions are organised at the State Capitals and Delhi, respectively. The objective of these conventions is to bring together officials of the nodal department, the Health Department, other related State and Central departments, voluntary organizations, bilateral and international agencies to share their experiences on the perfomance of ICDS, to identify the difficulties and debate on the approaches for the improvement in different components of ICDS. The plenary sessions, the group discussions and formal and informal interactions constitute the programme of these conventions. The major issues for discussion are decided in advance, the hard data on performance is circulated and discussions are based on facts and figures. The recommendations are emerged from these conventions have helped to improve the functioning of ICDS in the following years. We can say that the evolution of ICDS startegies has been based on the feed-back received from the field workers, state officers and others listed as participants of the conventions and consensus arrived at the meetings. Essentially, therefore, these conventions have become bottom up approach of planning of the activities. It has also offered an opportunity of motivation for the fence-sitters by those who are deeply committed to the programme. Recently, during last few years an effort has been started to have similar meetings at the divisional levels.

LIST OF MEMBERS OF CENTRAL TECHNICAL COMMITTEE ON HEALTH AND NUTRITION INTEGRATED CHILD DEVELOPMENT SERVICES

1. Prof. B. N.Tandon — Chairman
   Head of the Department of
   Gastroenterology & Human Nutrition Unit
   AIIMS
   New Delhi-110029.

2. Director — Member
   Ministry of Social Welfare
   Shastri Bhawan, New Delhi.

3. Joint Director — Member
   Planning Commission
   Parliament Street
   New Delhi.

4. Dy. Commissioner — Member
   Ministry of Health & Family Welfare
   Nirman Bhawan, New Delhi

5. Asst. Commissioner (BCH) — Member
   Ministry of Health & Family Welfare
   Nirman Bhawan, New Delhi.

6. Director — Member
   National Institute of Public Cooperation
   and Child Development
   Opposite Police Station,
   Hauz Khas,
   Siri Institutional Area,
   New Delhi.

7. Dr. B.N.S. Walia — Member
   Heal of the Department of Pediatrics
   PGI, Chandigrah.

8. Director — Member
   Central Heath Education Bureau (CHEB)
   Kotla Road, New Delhi - 110 002.

Subject : Committee on matters relating to the health and nutrition aspects of the ICDS programme.

In partial modification of the Reference No. 8-18/76-CD dated 30 June, 1976 the Central Technical Committee is re-constituted as shown below:-

1.	Prof. B. N. Tandon Head of the Deptt. of Gastroenterology and Human Nutrition, AIIMS, New Delhi-29	Chairman
2.	Director (CD) Deptt. of Women and Child Development Ministry of Human Resources Development Shastri Bhawan New Delhi	Member
3.	Deputy Advisor (PEO) Planning commission Yojana Bhawan New Delhi.	Member
4.	The Joint Secretary (Immunisation) Ministry of Health & Family Welfare Nirman Bhawan, New Delhi	Member
5.	Deputy Commissioner (MCH) Ministry of Health & Family Welfare Nirman Bhawan, New Delhi.	Member
6.	Director National Institute of Communicable Diseases, New Delhi.	Member
7.	Director National Institute of Public Cooperation & Child Development 5, Siri Institutional Area Hauz Khas, New Delhi-16.	Member
8.	President Indian Academy of Paediatrics 54-A, 5th Avenue, Anna Nagar. Madras.	Member

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